

# FINAL SUMMARY REPORT

## New Bedford Harbor Long Term Monitoring V Contract No. W912WJ-09-D-0001-0018



Prepared For:  
United States Army Corps of Engineers  
New England District  
696 Virginia Road  
Concord, MA 01742

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November 2010

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## **1.0 INTRODUCTION**

### **1.1 SITE NAME, LOCATION, AND DESCRIPTION**

The New Bedford Harbor Superfund Site, located in Bristol County, Massachusetts, extends from the shallow northern reaches of the Acushnet River estuary south through the commercial harbor of New Bedford and into 17,000 adjacent areas of Buzzards Bay (Figure 1). Industrial and urban development surrounding the harbor has resulted in sediments becoming contaminated with high concentrations of many pollutants, notably polychlorinated biphenyls (PCBs) and heavy metals, with contaminant gradients decreasing from north to south. From the 1940s into the 1970s two electrical capacitor manufacturing facilities, one located near the northern boundary of the site and one located just south of the New Bedford Harbor hurricane barrier, discharged PCB wastes either directly into the harbor or indirectly via discharges to the City's sewerage system. The Site has been divided into three areas – the upper, lower and outer harbors – consistent with geographical features of the area and gradients of contamination. The Site is also defined by three state-sanctioned fishing closure areas extending approximately 6.8 miles north to south and encompassing approximately 18,000 acres in total.

The City of New Bedford, located along the western shore of the Site, is approximately 55 miles south of Boston. During most of the 1800s, New Bedford was a world renowned center of the whaling industry and attracted a large community of immigrants from Portugal and the Cape Verde islands. Including the neighboring towns of Acushnet, Fairhaven and Dartmouth, the combined 2000 population was approximately 151,000. New Bedford is currently home port to a large offshore fishing fleet and is a densely populated manufacturing and commercial center. By comparison, the eastern shore of New Bedford Harbor is predominantly residential or undeveloped. A large (approximately 70 acre) salt marsh system has formed along almost the entire eastern shore of the upper harbor.

The Acushnet River's 16.5 square mile (43 km<sup>2</sup>) drainage basin (VHB, 1996) discharges to New Bedford Harbor in the northern reaches of the Site, contributing on average relatively minor (except during high periods of runoff) volumes of fresh water to the tidally influenced harbor. Numerous storm drains, combined sewer overflows (CSOs) and industrial discharges as well as smaller brooks and creeks also discharge directly to the Site. The upper and lower harbors are areas of net groundwater discharge and are generally described as a shallow, well-mixed estuary.

The upper harbor comprises approximately 187 acres, with current sediment PCB levels ranging from below detection to approximately 4,000 parts per million (ppm). Prior to the removal of the most contaminated hot spot sediments in 1994 and 1995 as part of EPA's first cleanup phase, sediment PCB levels were reported higher than 100,000 ppm in the upper harbor. The boundary between the upper and lower harbor is the Coggeshall Street Bridge where the width of the harbor narrows to approximately 100 feet. The lower harbor comprises approximately 750 acres, with sediment PCB levels ranging from

below detection to over 100 ppm. The boundary between the lower and outer harbor is the 150 foot wide opening of the New Bedford hurricane barrier, constructed in the mid-1960s. Sediment PCB levels in the outer harbor are generally low, with only localized areas of PCBs in the 50-100 ppm range near the Cornell-Dubilier plant and the City's sewage treatment plant's outfall pipes. The southern extent of the outer harbor and the Site is an imaginary line drawn from Rock Point (the southern tip of West Island in Fairhaven) southwesterly to Negro Ledge and then southwesterly to Mishaum Point in Dartmouth.

## 1.2 SITE HISTORY AND ENFORCEMENT ACTIVITY

Identification of PCB-contaminated sediments and seafood in and around New Bedford Harbor was first made in the mid 1970s as a result of EPA region-wide sampling programs. Total PCB usage in New Bedford at this time was around two million pounds per year (Nelson et al., 1996). In 1978, the manufacture and sale of PCBs was banned by the federal Toxic Substance Control Act (TSCA). In 1979, the Massachusetts Department of Public Health promulgated regulations prohibiting fishing and lobstering throughout the Site due to elevated PCB levels in area seafood. Elevated levels of heavy metals in sediments (notably cadmium, chromium, copper and lead) were also identified during this time frame. Due to these concerns, the Site was proposed for the Superfund National Priorities List (the NPL) in 1982, and finalized on the NPL in September 1983. Pursuant to 40 CFR 300.425(c)(2), the Commonwealth of Massachusetts nominated the Site as its priority site for listing on the NPL.

EPA's site-specific investigations began in 1983 and 1984 with the Remedial Action Master Plan (Weston, 1983) and the Acushnet River Estuary Feasibility Study (NUS, 1984). Site investigations continued throughout the rest of the 1980s and early 1990s, including a pilot dredging and disposal study in 1988 and 1989 (Otis et al., 1990), which field tested different dredging and disposal techniques for upper harbor sediments. Site investigations also included extensive physical and chemical computer modeling of the Site (Battelle, 1990). These Site studies are summarized in more detail in the ROD for the hot spot areas of the Site (EPA, 1990) and in the 1990 Feasibility Study for the Site (Ebasco, 1990).

Collectively, these investigations identified the Aerovox facility as the primary source of PCBs to the Site. PCB wastes were discharged from Aerovox's operations directly to the upper harbor through open trenches and discharge pipes, or indirectly throughout the Site via CSOs and the City's sewage treatment plant outfall. Secondary inputs of PCBs were also made from the Cornell-Dubilier Electronics, Inc. (CDE) facility just south of the New Bedford hurricane barrier.

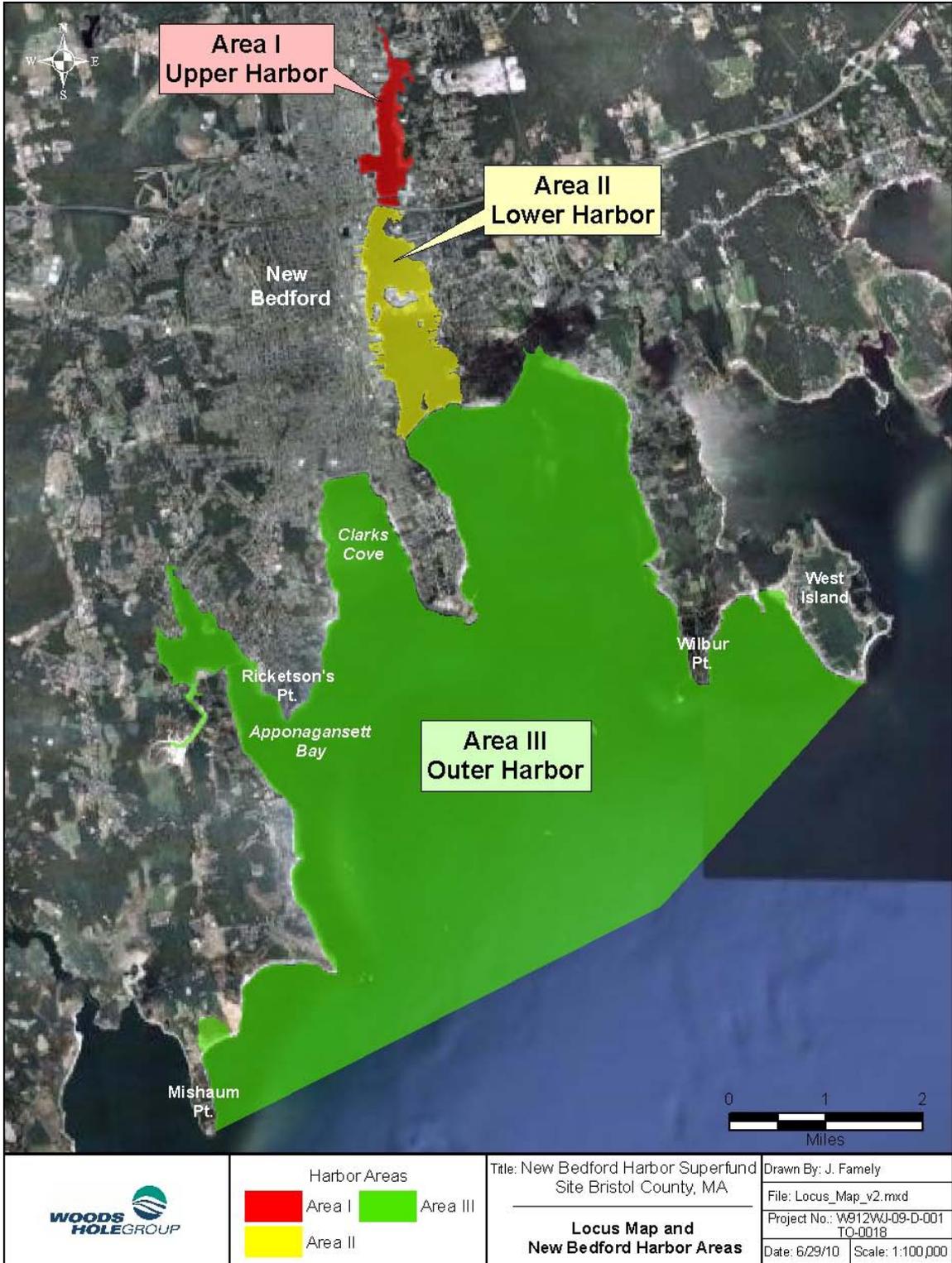


Figure 1. Site Map

In April 1990, EPA issued the ROD for the hot spot operable unit of the Site. The hot spot ROD called for dredging and on-site incineration of the Site's most highly PCB-contaminated sediments located adjacent to the Aerovox facility. The ROD specified a 4,000 ppm PCB level to define the sediments to be dredged (sediments below this 4,000 ppm threshold were to be left in place). Dredging of these sediments – about 14,000 cubic yards (cy) in volume and 5 acres in area – began in April 1994 and was completed in September 1995. However, due to a vehement and congressionally-supported reversal in local support for on-site incineration during the initial mobilization stage, EPA suspended the incineration component of the hot spot remedy (EPA, 1995). The dredged hot spot sediments were therefore placed in interim storage in a shoreline confined disposal facility (CDF) near Sawyer Street in New Bedford, and ultimately transported in 1999 to an offsite TSCA landfill.

In September 1998, EPA issued ROD 2, the ROD for the upper and lower harbor operable unit (EPA, 1998). ROD 2 called for the dredging of approximately 450,000 cy of PCB-contaminated sediments, and disposal in four shoreline CDFs. Two localized areas of PCB-contaminated sediment located just south of the hurricane barrier were also included in ROD 2 (as illustrated by Figure 22 of ROD 2). Both areas are in the general vicinity of the pilot sub-aqueous cap installed by EPA in 2005. Further investigation of the outer harbor area of the Site is underway, as part of operable unit three (OU-3), to determine whether additional remediation is appropriate for this area.

On August 15, 2002 EPA issued a change to the 1998 harbor cleanup plan using a process known as an Explanation of Significant Difference (ESD) (EPA 2002). This ESD, which follows an earlier ESD issued in September 2001, eliminates CDF "D", the largest of the four CDFs (confined disposal facilities), and instead sends the dredged sediment slated for it to an offsite landfill. This ESD as well as other site information is available for review at the New Bedford Free Library (reference section), at EPA's Boston Records Center and on-line at the New Bedford Harbor Superfund Site website at [www.epa.gov/ne/nbh](http://www.epa.gov/ne/nbh).

### 1.3 PURPOSE AND SCOPE OF STUDY

In order to assess the effectiveness of the New Bedford Superfund remediation efforts, a long term environmental monitoring plan has been developed by the US Environmental Protection Agency's Research Laboratory, Atlantic Ecology Division in Narragansett, Rhode Island (AED). The plan incorporates an intensive sampling and analysis effort for the purpose of quantifying the long-term environmental effects of reduced PCB levels in the sediments and water column of the New Bedford Harbor estuary as a result of remediation efforts. The four previous sampling rounds for this program include the "baseline" sampling event conducted in October 1993 (LTM I), a second event (LTM II) conducted immediately after removal of the "hot spot" sediments in OU#2 during October of 1995, a third event conducted in 1999 (LTM III), and a fourth event conducted in 2004 by Battelle (LTM IV). The fifth event was conducted in 2009 (LTM V). This Summary Report describes the field and laboratory components of the LTM V

program, and presents the LTM V data. Sample collection was completed in September of 2009 by Woods Hole Group, Inc., the prime contractor for this work.

The typical suite of analyses for LTM assessments historically included water quality measurements, sediment analyses for PCB congeners, metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium), acid volatile sulfides (AVS), total organic carbon (TOC), grain size, sediment toxicity testing, and benthic biology assessments. Sediment analyses for metals, AVS, and toxicity were not pursued in LTM V due to budgetary constraints.

## **2.0 METHODS**

### **2.1 QUALITY ASSURANCE**

Quality Assurance (QA) for this project is presented in detail in the Quality Assurance Project Plan (QAPP) developed for the LTM V survey (Woods Hole Group, 2009a).

### **2.2 FIELD METHODS**

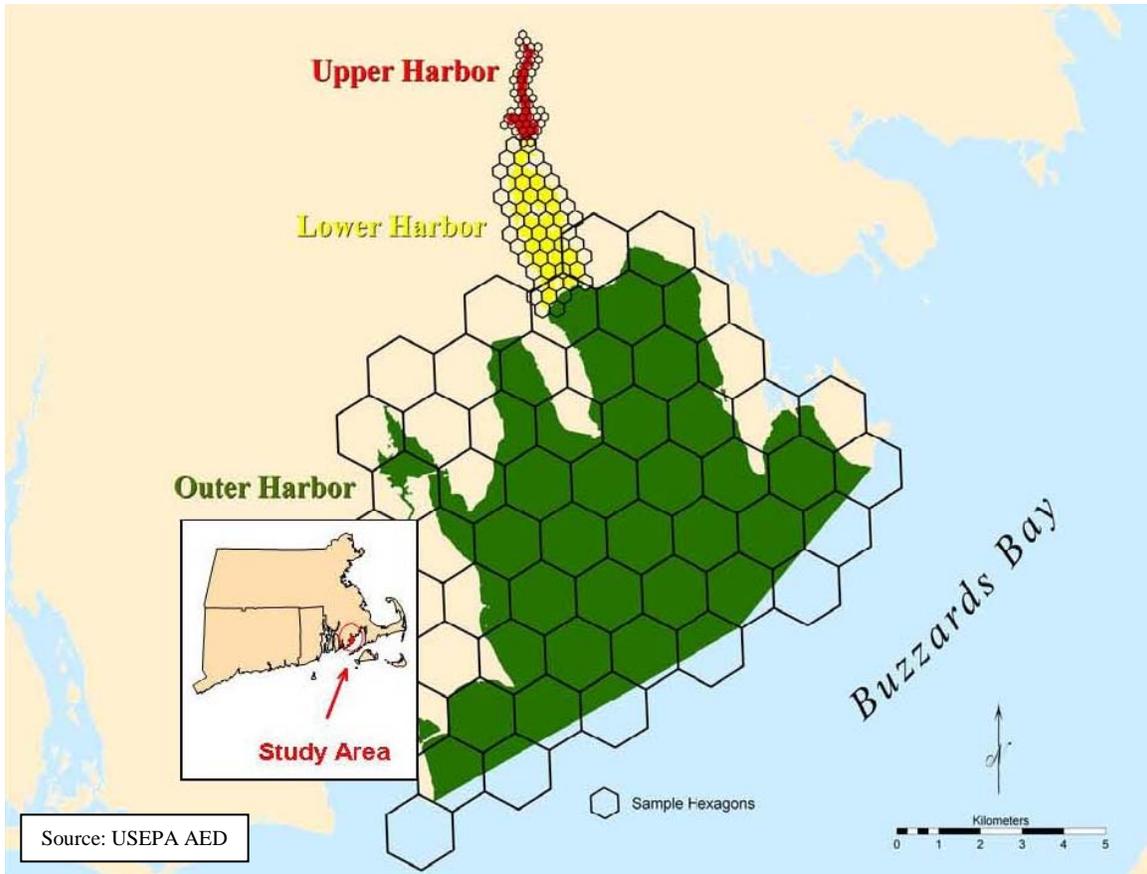
Detailed accounts of field sampling events and methods are provided in the NBH LTM V Field Sampling Report (Woods Hole Group, 2009b).

The field sampling program followed the guidelines and protocols (Strobel, 2000) developed for the Environmental Monitoring and Assessment Program (EMAP), an EPA program developed to monitor and assess the status and trends of national ecological resources over multiple spatial and temporal scales. Sampling was conducted at 79 separate stations located in three distinct geographical areas of New Bedford Harbor.

- **Area I:** Woods Street to the Coggeshall Street Bridge (27 stations)
- **Area II:** Coggeshall Street Bridge to the Hurricane Barrier (29 stations)
- **Area III:** Hurricane Barrier to the edge of Fishing Closure Area 3 (23 stations)

A hexagonal sampling grid was established by EPA AED within each of the three sampling areas (Figure 2). In order to obtain representative samples, the hexagonal sampling grid was proportionally adjusted to scale with the progressively larger sampling areas. The hexagons in Area I (Upper Harbor) have a radius (center to side mid-point) of 88m; the hexagons in Area II (Lower Harbor) have a radius of 175m; the hexagons in Area III (Outer Harbor) have a radius of 793m.

The target sampling stations and as-sampled stations are shown in Figures 3 through 5. As-sampled stations are displayed in green and mostly overlap target stations (yellow).



**Figure 2. LTM Sampling Areas and Sampling Hexagons**

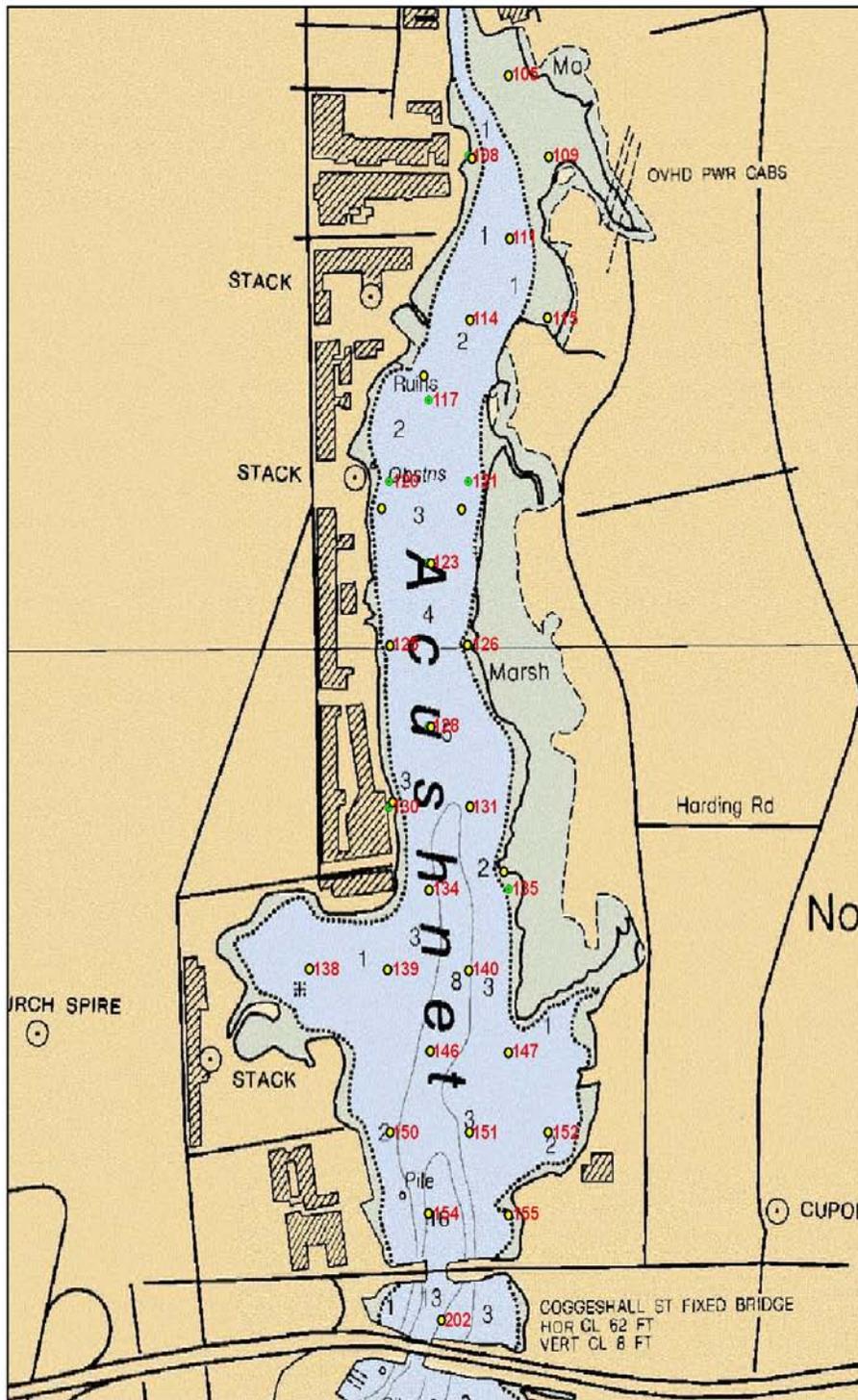


Figure 3. Area I Sampling Stations (Stations 105 – 202)

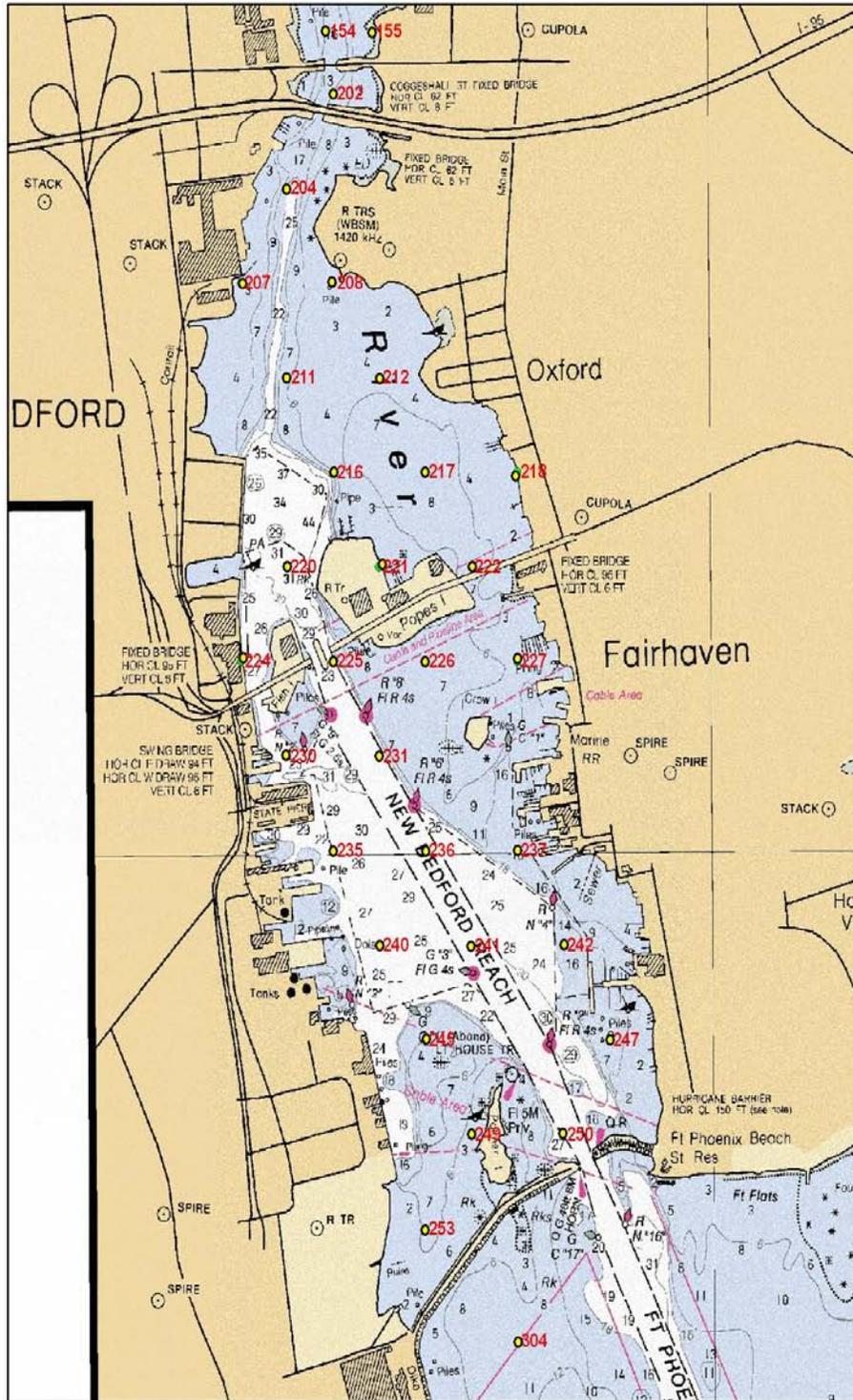


Figure 4. Area II Sampling Stations (Stations 204 – 253)

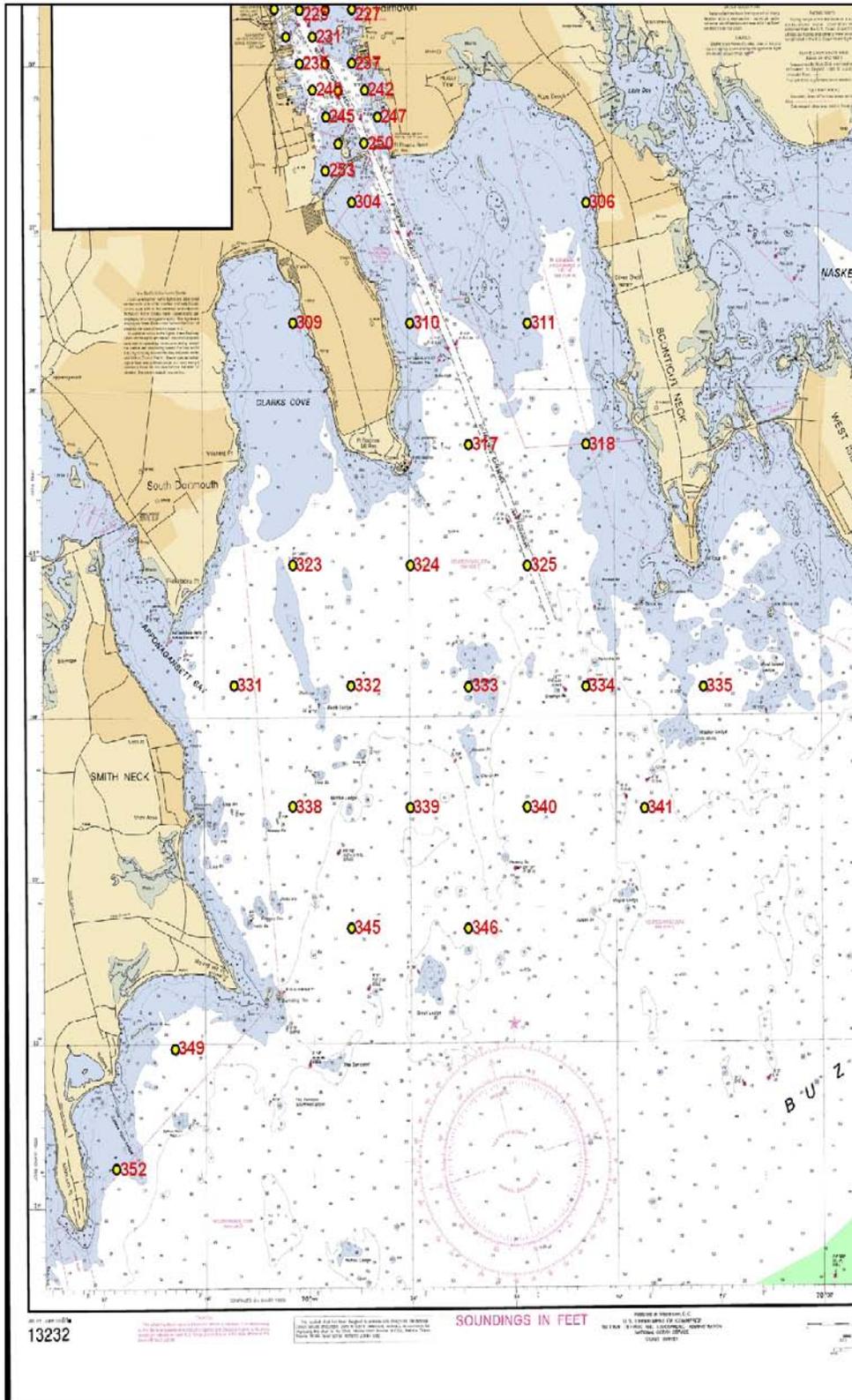


Figure 5. Area III Sampling Stations (Stations 304 – 352)

Navigation was performed using a Differential Global Positioning System (DGPS). Stations were initially located using the target coordinates established during the 1993 and 1995 surveys (Appendix A of the QAPP). In general, the targets were achieved. However, where the target coordinates were either inshore of navigable waters, or were inside the no-spud areas in the dredge area, the sample was relocated to the nearest acceptable location. All as-sampled locations were within the bounds of the associated station hexagon.

At each station, in situ water quality measurements were taken prior to the collection of sediment samples. Measured parameters included salinity, temperature, and dissolved oxygen. YSIs were used to collect water quality data from one meter above the bottom, unless limited by shallow water (in which case measurements were taken just above the bottom). Sediment samples at each station were collected for the analysis of PCBs (18 NOAA Congeners), total organic carbon (TOC), and grain size. Three benthic biology samples were collected at each station: two for community analysis and one for archiving. A summary of sampling and analysis activities is presented in Table 1.

Grab samples for chemistry analysis were collected at all of the stations using a Kynar<sup>®</sup> coated 0.1 m<sup>2</sup> Young modified Van Veen grab sampler. Each grab was inspected for acceptability. If the grab was deemed unacceptable (grab was not full; sediment was slumped or washed out) it was discarded over the opposite side of the vessel to avoid contaminating subsequent samples. The equipment was washed with site water before collecting the next sample. Once the grab was deemed acceptable, samples were collected for chemistry (PCBs and total organic carbon), grain size, and an archive from the top 2 cm. Each sample was contained in an 8-oz glass jar with a Teflon-lined lid, and labeled with pre-printed and bar-coded labels. Samples were stored in coolers on ice until being transferred to the sample custodian.

Grab samples for infauna analysis and associated grain size were collected concurrently with the samples described above. The infauna grab samples were collected using a 0.04-m<sup>2</sup> Young-modified Van Veen grab sampler. Triplicate grabs were taken at each station. Once the grab was deemed acceptable, a grain size sample was collected by inserting an open-ended syringe through the entire depth of the core and drawing the sediment out, thereby capturing a known volume of sample representing the entire depth of the grab. The remaining material was transferred to a sieving station and passed through a 0.5 mm sieve by washing with low pressure site water. All material remaining in the sieve was transferred to a clean plastic jar, preserved with buffered solution of 10% formalin and Rose Bengal stain, and identified with pre-printed labels. Grain size samples were also labeled and stored on ice. All benthic samples were transferred to sample custodians at the end of the sampling day.

For both sediment and infauna grabs, the vessel was moved slightly while on station to avoid re-sampling the same location. After each station was completed, the grab samplers were decontaminated with Alconox water solution then rinsed with site water.

**Table 1. Summary of Sampling and Analysis Program**

| Field Collection  | Sample Type        | Analyses   | No. Samples/<br>Station                       | Field QC<br>Samples<br>(FDs) | Total No.<br>Field<br>Samples<br>Collected | Lab QC<br>Samples      | Total<br>Samples |
|---|--------------------|--|---|------------------------------|--|------------------------|------------------|
| Sediment sampling at 79 stations within Segments 1, 2, 3 Plus one field duplicate (FD) within each Segment (3 total FDs) for each type of analysis. | Chemistry          | PCBs   | 1   | 3 FDs                        | 82   | 5 MS<br>5 MSD<br>5 SRM | 97               |
|   |                    | TOC  | 1   | 3 FDs                        | 82   | 5 MS<br>5 MD           | 92               |
|   | Chemistry Archive  | Organics & Metals                                | 1   | NA                           | 79   | NA                     | 79               |
|   | Physical           | Grain size                                       | 1/chemistry<br>1/ea of 3 benthic<br>(4 total) | 3 FDs /chemistry             | 319  | 4 MD                   | 323              |
|   | Biological         | Benthic Community analysis (species enumeration) | 2   | NA                           | 158  | NA                     | 158              |
|   | Biological Archive | Benthic Community analysis (species enumeration) | 1   | NA                           | 79   | NA                     | 79               |
| Water Column testing at 79 stations (total) within Segments 1, 2, 3   | Field measurement  | Temperature                                      | 1   | NA                           | 79   | NA                     | 79               |
|   |                    | Dissolved oxygen                                 | 1   | NA                           | 79   | NA                     | 79               |
|   |                    | Salinity   | 1   | NA                           | 79   | NA                     | 79               |

FD = Field duplicate  
 MS = Matrix spike  
 MSD = Matrix spike duplicate  
 MD = Matrix (lab) duplicate  
 SRM = Standard Reference Material  
 NA = Not Applicable

## 2.3 LABORATORY METHODS

### 2.3.1 Chemical and Physical Analyses

PCB, TOC, and Grain size analysis were performed by Alpha Analytical in Mansfield, Massachusetts. Table 2 summarizes the analytical methods. Standard operating procedures (SOPs) employed by Alpha Analytical are referenced below and in Table 2, and are provided in Appendix D of the QAPP (Woods Hole Group, 2009a).

#### 2.3.1.1 PCBs

All sediment samples were analyzed for percent solids prior to extraction for PCB analysis. Any sample with less than 50% solids was air-dried and re-analyzed until percent solids exceeded 50%. Alpha Analytical extracted the sediments using the shaker table extraction procedure (Alpha SOP #OP-013) followed by silica gel cleanup (Alpha SOP #OP-014) and then sulfuric acid cleanup (Alpha SOP #OP-010). Extracts were analyzed using gas chromatography/mass spectrometry (GC/MS) in the Selected Ion Monitoring (SIM) mode of operation for the 18 NOAA PCB Congeners (Alpha SOP #O-015). Sample data was quantified by the method of internal standards. PCB congener results were reported on a dry-weight basis (based on the after air-drying percent solids

result). For the LTM V PCB congener analyses, the laboratory used the Reporting Limits (RL) as the detection limits. The RL is the lowest limit of detection for a specific sample and instrument calibration. Results were qualified by the laboratory as non-detect (U) if the result of the analysis was less than ½ the RL; U-qualified data were reported as the full value of the RL. Results were qualified by the laboratory as estimated (J) if the result of the analysis was less than the RL but greater than or equal to ½ the RL; J-qualified data were reported as the value calculated from the instrument. Data from Alpha was not surrogate recovery corrected. This correction, as required by USACE and performed historically for LTM PCB results by the laboratory prior to data reporting, was performed for LTM V during the data validation process by New Environmental Horizons, Inc. Further discussion of surrogate recovery correction is provided in Section 2.4 of this report.

For the purpose of analysis, a Total PCB value was calculated from the PCB congener data. A conservative approach to calculating Total PCBs was implemented in which the 18 NOAA PCB Congeners were summed for each station. All U-qualified data were included in the sum using the full RL value. All J-qualified data also were included in the sum.

**Table 2. Analytical Methods**

| <b>Analyte Group</b> | <b>Laboratory SOP No.</b>  | <b>Equivalent EPA or other Agency Method No.</b>   |
|----------------------|--|--|
| PCBs                 | Alpha SOP OP-013 (extraction)<br><br>Alpha SOP OP-014 (silica gel cleanup)<br>Alpha SOP OP-010 (sulfuric acid cleanup)<br>Alpha SOP O-015 (GC/MS-SIM analysis) | Shaker table extraction: performance-based method (NOAA Status and Trends (NOAA 1993) Extract Cleanup: EPA Method 3630C<br><br>Extract Cleanup: EPA Method 3665A<br><br>Analysis: SW-846 8270C, modified (EPA, 1996) & EPA 680, modified (EPA, 1985) |
| TOC                  | Alpha SOP W-028  | SW-846 9060, modified (EPA, 1996)  |
| Grain Size           | Alpha SOP W-029 (Grain Size/ Particle-Size with Hydrometer)  | ASTM D422-63 (ASTM, 1998)  |
| Percent Solids       | Alpha SOP W-001  | EPA Method 2540G   |

**2.3.1.2 TOC**

Total Organic Carbon (TOC) analysis was performed by Alpha Analytical following EPA SW-846 method 9060 modified for replicate analyses (Alpha SOP #W-028). For this report, the average value of the replicate results was reported for each station.

### 2.3.1.3 Grain Size

Grain size analysis was performed by Alpha Analytical following ASTM D422-63 (Alpha SOP #W-029). Sediment grain-size was determined with phi-classes for sands using wet sieve analysis based on the methods outlined in ASTM D422-63 (particle-size analysis with hydrometer, ASTM 1998). Wet sieving yielded the following phi-classes: Gravel (>2.00 mm), Very Coarse Sand (1.00-2.00 mm), Coarse Sand (0.50-1.00 mm), Medium Sand (0.25-0.50 mm), Fine Sand (0.125-0.25 mm), Very Fine Sand (0.0625-0.125 mm), and Silt and Clay (<0.0625 mm). Pipette analysis resulted in percents of silt (0.0039-0.0625 mm) and clay (<0.0039 mm).

### 2.3.2 Benthic Biology Analysis

Benthic biology sorting, enumeration, and identification was performed by Normandeau Associates in Bedford, New Hampshire. Sample processing was performed as described in Appendix E (EMAP Near-Coastal Laboratory Procedures Macro-benthic Community Assessment) of the QAPP (Woods Hole Group, 2009a), with the exception that sample biomass determinations were not performed. At each station, three replicate samples were collected: two for species enumeration, and one for archiving.

## 2.4 DATA VALIDATION METHODS

New Environmental Horizons, Inc. (NEH) performed an independent validation of the chemical data for PCB congeners and TOC generated during the LTM V. The basis for the validation was the EPA Region I validation guidelines, modified to include project-specific and method-specific criteria as discussed in the QAPP (Woods Hole Group, 2009a), consistent with validation protocols performed historically for LTM data. The data validation reports are provided in Appendix A.

Based on the Tier 1+ validation of the 18 NOAA PCB Congeners and TOC, all results are considered usable for project decisions based on a comparison to the NBH LTMV QAPP requirements. The validation reports (Appendix A) provide an understanding of the potential uncertainty (bias) in the qualified results.

Surrogate recovery correction of PCB data was performed during data validation, which is different from previous LTM procedures. A technical memorandum was produced by NEH to document the methodology used for the surrogate recovery corrections applied during the validation stage for LTM V data, and previous corrections applied directly by the laboratory (e.g., LTM IV). The technical memorandum is presented in Appendix B and current procedures are summarized here. 4,4'-Dibromooctafluorobiphenyl (DBOB) was used as a surrogate for congeners PCB8, PCB18, PCB28, PCB44, PCB52, PCB66, and PCB101. PCB198 was used as a surrogate for congeners PCB105, PCB118, PCB128, PCB138, PCB153, PCB170, PCB180, PCB187, PCB195, PCB206, and PCB209. If these surrogates were recovered within the acceptable criteria range (50% - 130%), as outlined in the QAPP (Woods Hole Group, 2009a), then each congener result (with the exception of non-detects, which were reported at the sample-specific reporting limit) was corrected as follows using the appropriate surrogate recovery percentage:

$$\text{Corrected Result} = \text{Uncorrected Result} \times (100/(\text{Surrogate \% Recovery}))$$

If one of the surrogates was not recovered within the acceptable criteria range, then all congeners were corrected using the surrogate that did meet the criteria. If both surrogates were not recovered within the acceptable criteria range, then no surrogate recovery correction was performed.

Surrogate recovery corrections were applied to 58 samples (and two field duplicate samples). Surrogate recovery corrections were not made to the remaining 21 samples (and one field duplicate sample) as the surrogates were diluted out.

### **3.0 RESULTS**

Sediment samples and water quality parameters were collected from 79 stations in the New Bedford Harbor study area between September 22, 2009 and September 28, 2009. A field duplicate sample was also collected from each of the three harbor areas (Station 146 in Area I, Station 212 in Area II, and Station 323 in Area III). Sample collection dates, times, coordinates and total water depths are presented in Appendix C.

#### **3.1 WATER QUALITY**

In situ water quality parameters were measured at all 79 stations in the New Bedford Harbor study area (Upper Harbor, Lower Harbor, and Outer Harbor). Water quality parameters were also taken for the three field duplicates. Salinity, temperature, and dissolved oxygen were measured prior to the collection of sediment samples. Water quality measurement depths and data are presented in Appendix D. Water quality data was not recorded at five field stations (309, 311, 318, 323, 324) and for one of the field duplicates (323 FD) because the YSI exceeded available memory, thereby disabling the continuous data collection function.

Based on the data collected during field sampling, the water quality conditions can be characterized as follows:

- In the Upper Harbor, salinity ranged from 21.43 to 31.33 ppt with a median of 27.04 ppt. Temperature ranged from 18.76 to 21.64 °C with a median of 20.57 °C. Dissolved oxygen ranged from 6.40 to 10.60 mg/L with a median of 8.16 mg/L.
- In the Lower Harbor, salinity ranged from 23.40 to 27.97 ppt with a median of 26.85 ppt. Temperature ranged from 18.14 to 20.05 °C with a median of 19.77 °C. Dissolved oxygen ranged from 5.51 to 10.41 mg/L with a median of 7.07 mg/L.
- In the Outer Harbor, salinity ranged from 26.89 to 33.37 ppt with a median of 29.84 ppt. Temperature ranged from 18.12 to 19.79 °C with a median of 18.90 °C. Dissolved oxygen ranged from 6.69 to 8.06 mg/L with a median of 7.21 mg/L.

In general, salinity was higher in the Outer Harbor than in the Upper and Lower Harbors. This is a result of the seawater from Buzzards Bay in the Outer Harbor mixing with the freshwater inflow to the Upper Harbor. Temperature decreased slightly with increasing depth from the Upper Harbor to the Outer Harbor. This is likely because the sampling was conducted in September, when the shallow water remains relatively warm due to waning summer climatological influences. The temperature gradient from the Upper to Outer Harbor was mild, though, likely due to the onset of cooler fall weather. Mean dissolved oxygen was slightly higher in the Upper Harbor than in the Lower or Outer Harbors, but the low-to-high ranges overlapped substantially, and there was no strong trend. No anoxic conditions were observed, likely because of the early fall conditions during sampling, which tend to be characteristic of increasing dissolved oxygen conditions in the region.

### 3.2 CHEMICAL ANALYSES

Sediment samples were collected at all 79 stations in the New Bedford Harbor study area (Upper Harbor, Lower Harbor, and Outer Harbor). A field duplicate sample was also collected from each of the three harbor areas (Station 146 in Area I, Station 212 in Area II, and Station 323 in Area III). Sediments were analyzed by Alpha Analytical for the 18 NOAA PCB congeners and TOC. The laboratory data was validated by NEH.

#### *3.2.1 Polychlorinated Biphenyls*

At each of the 79 stations, plus the three field duplicate stations, sediment samples were collected for PCB analysis. Surrogate recovery correction of the PCB data was performed by NEH during data validation. Some of the sediment samples, mostly those collected from the Upper Harbor (Area 1), were highly contaminated, necessitating dilution in the laboratory. The surrogates that had initially been spiked into the sample were diluted out in these instances, and consequently no surrogate recovery correction could be performed. Final validated results of PCB analysis are presented in Appendix E.

Calculations of Total PCBs were performed on the validated results. This calculation summed the 18 NOAA PCB congeners, using the RL value for all non-detected (U-qualified) results. The Total PCBs calculation did not utilize a multiplier, and any samples in which surrogate recovery correction was performed for some of the congeners were given a “K” qualifier for the summed result (Appendix E).

Throughout all three study areas, Total PCBs ranged between 9 parts per billion (ppb) and 330,971 ppb. The lowest Total PCB value was at Station 306 in the Outer Harbor; the highest Total PCB value was at Station 125 in the Upper Harbor. Results display a trend of decreasing Total PCBs from the Upper Harbor to the Outer Harbor. Some details include:

- Upper Harbor Total PCB levels were between 570 ppb (Station 202) and 330,971 ppb (Station 125) with a median of 29,840 ppb (Station 138).

- In the Lower Harbor, Total PCB was between 525 ppb (Station 250) and 18,729 ppb (Station 217) with a median of 4,423 ppb (Station 236).
- Outer Harbor Total PCB levels were between 9 ppb (Station 306) and 1,131 ppb (Station 304) with a median of 118 ppb (average of Stations 333 and 335).

This trend of order-of-magnitude decreases in Total PCBs from the Upper to the Lower and into the Outer Harbor is consistent with prior LTM sampling events. High levels in the Upper Harbor are a result of the historical PCB source to the Upper Harbor from the Aerovox facility as discussed in Section 1.2.

### *3.2.2 Total Organic Carbon*

At each of the 79 stations, plus the three field duplicate stations, sediment samples were collected for TOC analysis. In the laboratory, a replicate analysis was performed. The TOC data, presented in Appendix F, are the averages of the laboratory replicates for each sample.

Throughout all three study areas, TOC ranged between 0.05% and 5.15%. The lowest TOC value was recorded at Station 306 in the Outer Harbor; the highest TOC value was recorded at Station 125 in the Upper Harbor. That the lowest and highest levels of TOC corresponded to the lowest and highest Total PCB concentrations, respectively, is consistent with prior analysis that demonstrated a relationship between TOC and PCB levels in New Bedford Harbor. Results display an overall trend of decreasing TOC from the Upper Harbor to the Outer Harbor, also indicative of the Total PCB trend.

In the Upper Harbor, TOC was between 0.10% and 5.15% with a median of 2.52%. In the Lower Harbor, TOC was between 0.33% and 4.06% with a median of 1.81%. In the Outer Harbor, TOC was between 0.05% and 3.28% with a median of 0.97%.

## **3.3 PHYSICAL ANALYSIS**

Sediment samples were collected at all 79 stations in the New Bedford Harbor study area (Upper Harbor, Lower Harbor, and Outer Harbor). A field duplicate sample was also collected from each of the three harbor areas (Station 146 in Area I, Station 212 in Area II, and Station 323 in Area III). Sediments were analyzed by Alpha Analytical for grain size.

At each of the 79 stations, plus the three field duplicate stations, four replicate sediment samples were collected for grain size analysis. One grain size replicate sample originated from the composited grab samples (top 2cm of the grab as specified in the field operations manual (Strobel, 2000)) collected for chemical analyses. The other three replicates were sub-sampled from the three sediment grab samples collected for benthic infauna analysis. An additional three field duplicates were collected in association with the chemistry analyses. The grain size data associated with the chemistry samples are presented in Appendix G. A brief summary of these grain size samples follows.

Total Percent Fines (sum of silt and clay) were highly variable throughout the study area:

- Upper Harbor: Fines ranged from 1% to 86%
- Lower Harbor: Fines ranged from 2% to 84%
- Outer Harbor: Fines ranged from 1% to 83%

Throughout all three study areas, the median grain size ( $d_{50}$ ) was between 0.0236mm and 1.0943mm, ranging between silt and very coarse sand. The finest median sediment sample was at Station 123 in the Upper Harbor; the coarsest sample was at Station 236 in the Lower Harbor.

In the Upper Harbor,  $d_{50}$  was between 0.0236mm and 0.6992mm, ranging from silt to coarse sand. The Lower Harbor  $d_{50}$  was between 0.0325mm and 1.0943mm, ranging from silt to very coarse sand. And, in the Outer Harbor,  $d_{50}$  was between 0.0270mm and 0.7155mm, ranging from silt to coarse sand.

Grain size data from the benthic community replicate sampling is presented in Appendix H. Grain size distribution curves for all (chemistry and benthic community) analyses are presented in the laboratory reports included in Appendix I. Sample locations ending in “11”, “12”, or “13” are associated with benthic replicates, while samples locations ending in “26” or “36” are associated with chemistry samples.

### 3.4 BENTHIC FAUNA

At each of the 79 stations, three replicate sediment samples were collected for benthic community analysis. Two of the replicates were sorted and enumerated, while the third replicate was archived. Benthic community abundance data in the format specified by EPA is attached to the Normandeau report, which is included in Appendix J. Results from one of the sorted and enumerated replicates are summarized as follows.

A total of 96 species and 19,688 organisms were enumerated from 27 samples in the Upper Harbor. The number of species encountered per station in the Upper Harbor ranged from 5 to 43, and the median in Upper Harbor samples was 14 species. Abundance per station in the Upper Harbor ranged from 17 to 4,137, and the median was 441 individuals. The station with the highest abundance (4,137) of any station sampled in LTM V was Station 108 in the Upper Harbor. The dominant species in the Upper Harbor was *Streblospio benedicti*, a polychaete worm. The total abundance of *Streblospio benedicti* in all Upper Harbor samples was 12,996. The next two most abundant organisms throughout the Upper Harbor were *Oligochaeta* (1,727), oligochaete worms, and *Polydora cornuta* (1,597), a polychaete worm.

A total of 136 species and 10,226 organisms were enumerated from 29 samples in the Lower Harbor. The number of species encountered per station in the Lower Harbor ranged from 4 to 59, and the median was 19 species. The station with the lowest species richness (4) of any station sampled in LTMV was Station 231 in the Lower Harbor. Abundance per station in the Lower Harbor ranged from 10 to 1,123, and the median was 318 individuals. The station with the lowest abundance (10) of any station sampled in

LTM V was Station 240 in the Lower Harbor. As with the Upper Harbor, the dominant species in the Lower Harbor was *Streblospio benedicti*, a polychaete worm. The abundance of *Streblospio benedicti* was 1,822. By comparison to the strong dominance of this species in the Upper Harbor, the *Streblospio benedicti* abundance in the Lower Harbor was much closer to the next two most abundant organisms throughout the Lower Harbor [*Tharyx acutus* (1,052), a polychaete worm, and *Leitoscoloplos sp.* (880), a polychaete worm].

A total of 233 species and 10,687 organisms were enumerated from the 23 samples in the Outer Harbor. The number of species encountered per station in the Outer Harbor ranged from 19 to 82, and the median was 43 species. The station with the highest species richness (82) of any station sampled in LTM V was Station 352 in the Outer Harbor. Abundance per station in the Outer Harbor ranged from 70 to 1,488, and the median was 439 individuals. The dominant species in the Outer Harbor was *Tharyx acutus*, a polychaete worm. The abundance of *Tharyx acutus* was 1,128. The next two most abundant organisms throughout the Outer Harbor were *Macoma tenta* (1,126), the elongate macoma clam and *Cylichna oryza* (902), a sea snail.

Although formal statistics were not computed, the data indicate an increase in benthic community diversity from the Upper to the Lower and into the Outer Harbor. Lists of all species encountered in the Upper, Lower, and Outer Harbors (for Replicate 1 benthic samples) are provided in Appendix K.

## **4.0 DISCUSSION**

The LTM V survey for New Bedford Harbor was completed in September 2009. Sediments were collected for physical, chemical and benthic biology analyses. Water quality parameters were also collected at each station. A total of 79 stations were sampled, and the appropriate field and laboratory QC was conducted.

This LTM V Summary Report presents the data. Provided in the appendices are station locations, water quality measurements, PCB (NOAA 18 Congeners) data, discussion of previous (LTM IV) and current (LTM V) approaches to PCB surrogate recovery correction, total organic carbon data, data validation reports, grain size data, and benthic infaunal community abundance data.

Although a multiplier of 2.6 has previously been developed to correlate the NOAA 18 PCB Congeners to a Total PCB value in the upper and lower harbors, this multiplier was not applied in the current or any previous LTM investigation.

The resulting data were uploaded into the New Bedford Harbor Database and are available for querying and downloading. Surrogate recovery correction was performed during data validation, and not by the laboratory. Surrogate recovery corrected results are identified in the database by a “K” qualifier. PCB Congeners, as obtained from the database, were summed (RL value used for non-detects) to obtain a measure of Total PCBs. TOC replicates, as obtained from the database, were averaged to obtain one result for each station reported herein. All other data were used as obtained from the database.

Although no formal analysis of the data is included in this report, summary observations are provided in Section 3. The results of the LTM V will be used by EPA to assess spatial trends in contaminated sediments. In conjunction with previous LTM data, the information will be used to assess temporal trends in contaminated sediments, and to assess the effectiveness of the New Bedford Harbor Superfund remediation efforts. Previous LTM reports may be found on-line at [www.epa.gov/ne/nbh](http://www.epa.gov/ne/nbh) under “Technical Documents”, “Long Term Benthic Monitoring”. LTM data also are planned for inclusion in the OU #3 Remedial Investigation.

## **5.0 REFERENCES**

- Battelle. 1990. Final Report for Modeling of the Transport, Distribution, and Fate of PCBs and Heavy Metals in the Acushnet River/New Bedford Harbor/Buzzards Bay System (Volumes I, II and III). Battelle Memorial Institute, Duxbury, MA. September 21, 1990.
- Ebasco Services Incorporated. 1990. Draft Final Feasibility Study of Remedial Alternatives for the Estuary and Lower Harbor/Bay, New Bedford, Massachusetts. Volumes I, II, and III. August 1990.
- Nelson, W.G., B.J. Bergen, S.J. Benyi, R.A. Voyer, C.J. Strobel, S. Rego, G. Thursby, and C.E. Pesch. 1996. New Bedford Harbor Long-Term Monitoring Assessment Report: Baseline Sampling. U.S. Environmental Protection Agency (EPA), National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division, Narragansett, RI. EPA/600/R-96/097.
- NUS Corporation. 1984. “Addendum – Draft Feasibility Study of Remedial Action Alternatives, Acushnet River Estuary above Coggeshall Street Bridge, New Bedford Site, Bristol County, Massachusetts”. September 1984.
- Otis, M., S. Andon and R. Bellmer et al. 1990. New Bedford Harbor Superfund Pilot Study, Evaluation of Dredging and Dredged Material Disposal. U.S. Army Corps of Engineers, New England Division. May 1990.
- Strobel, C.J. 2000. Coastal 2000 – Northeast Component: Field Operations Manual. U.S. Environmental Protection Agency, National Health and Environmental Effects Research Laboratory, Atlantic Ecology Division, Narragansett, RI. EPA/620/R-00/002.
- United States Environmental Protection Agency (EPA). 1990. Record of Decision Summary, New Bedford Harbor Hot Spot Operable Unit, New Bedford, Massachusetts. United States Environmental Protection Agency Region I. April 1990.
- United States Environmental Protection Agency (EPA). 1995. New Bedford Harbor Superfund Site, Hot Spot Operable Unit, Explanation of significant Differences for Continued Storage of Hot Spot Sediments. United States Environmental Protection Agency Region I. October 1995.
- United States Environmental Protection Agency (EPA). 1998. Record of Decision for the Upper and Lower Harbor Operable Unit, New Bedford Harbor Superfund Site, New Bedford, Massachusetts. United States Environmental Protection Agency Region I. September 1998.
- United States Environmental Protection Agency (EPA). 2002. Explanation of Significant Differences for the Upper and Lower Harbor Operable Unit, New Bedford Harbor Superfund Site, New Bedford, Massachusetts. United States Environmental Protection Agency Region I. August 2002.

VHB. 1996. New Bedford Harbor: Historic overview and natural resources and uses status report. Prepared for New Bedford Harbor Trustee Council by Vanesse Hangen Brustlin, Inc. Gloucester, MA. July, 1996.

Weston, R. 1983. New Bedford Remedial Action Master Plan, Final Report. Prepared by Roy F. Weston, Inc. for the U.S. Environmental Protection Agency. May 1, 1983.

Woods Hole Group, Inc. 2009a. Quality Assurance Project Plan New Bedford Long Term Monitoring V. Prepared for US Army Corps of Engineers. September, 2009.

Woods Hole Group, Inc. 2009b. Field Sampling Report New Bedford Long Term Monitoring V. Prepared for US Army Corps of Engineers. November, 2009.

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**APPENDIX A. DATA VALIDATION REPORTS**

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**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912896

Lab: Alpha Analytical

Date Sampled: 9/22/09 through 9/27/09

Analysis: 18 NOAA PCB Congeners by GC/MS-SIM

No. Samples

16

Matrix:

Sediments

| Data Element | Preservation & HT | Surrogates %R 50-130% | LCS/LCSD                           | MS/MSD               | FD                         | MB                           | RL                          | Issues with Qualifiers?                                       | Other   |
|--------------|-------------------|-----------------------|------------------------------------|----------------------|----------------------------|------------------------------|-----------------------------|---|---|
|              |                   |                       | SRM %R 40-140% RPD ≤ 30%           | %R 40-140% RPD ≤ 30% | RPD ≤ 30% SW RPD ≤ 50% SED | < RL or < 5x Conc. in sample | meets QAPP req. for matrix? |   |   |
| Acceptable   |                   |                       |                                    |                      |                            |                              |                             |   |   |
| Yes          | √                 | √                     |                                    | √                    | NA                         | √                            |                             | NA  |   |
| No           |                   |                       | Estimate (UJ) BZ209 in all samples |                      |                            |                              | Estimate (J) 5 results < RL | Data qualified "D" by the lab for all samples analyzed DF > 1 | Surrogate recovery correct 3 samples - see "Surrogate Recovery Correction _L0912896.pdf" and pages 2-3 of this report for details |

**Did the Laboratory Narrative contain any issues which may affect data quality? Yes; however, all issues were reported in the summary data.**

**Were the %solids acceptable (>30%)? Yes all > 93% solids after air-drying. Prior to air-drying, % solids were 29-82%.**

*The data package consisted of a laboratory narrative, data sheets for samples, Method Blanks (MB), laboratory control samples (LCS), Matrix Spike/Matrix Spike Duplicates (MS/MSD), and the executed chain-of-custody. Summary information for initial and continuing calibrations were not present nor were raw data for samples and quality control (QC) reported. This Tier I+ review assumed that initial calibrations and qualitative and quantitative determination of the 209 PCB Congeners were acceptable unless an issue was raised in the laboratory narrative.*

Comments:

Samples were received intact at 2.6C to 4.1C in 5 shipments on the day after sample collection (e.g., samples collected on 9/24 were received on 9/25/09). COC seals were absent from coolers; however, these were picked up from the site by a courier and delivered directly to the lab.

Samples were analyzed for % solids, TOC, and Grain size. All samples were also air-dried and subsequently analyzed for %solids - air-dried and 18 NOAA Congeners.

*HT*: Air-dried samples were extracted on 10/5/09 and analyzed by 10/23/09 - HT met - No action required.

*Surrogates*: both surrogates (BZ19-C13 and BZ202-C13) were diluted out (0% recovery) due to dilutions made for analysis of the samples (DF ranged from 100 to 1000) for all samples except 501225, 501425, and 502825. For these three samples, surrogates were recovered within criteria - No Action required.

*LCS*: %Rec for LCS and LCSD were all within 40-140% for all 18 NOAA Congeners spiked and RPDs between LCS and LCSD all OK except BZ52 LCS recovery high (162%) LCSD and RPD OK, BZ206 LCSD low (39%) LCS and RPD OK, and BZ209 LCS&LCSD both low (20% and 21%) - RPD OK. No Action taken for BZ52 ad BZ206 since recovery OK for one of the spiked and RPD OK - Action required for low BZ209 though.

*\*ACTION: BZ209 estimated (UJ) in all 16 sediment samples with possible low bias due to low LCS/LCSD recoveries.*

Date: ~~3/29/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912896

Lab: Alpha Analytical

Blank Action:                      Blanks Reviewed: Method Blank  
No EB associated with samples

| Blank ID     | Contaminant / Level | Matrix Related? | Action Level / Action | Sample and Reported Result                    | Corrected Result |
|--------------|---------------------|-----------------|-----------------------|---|------------------|
| Method Blank | BZ#18 0.3 J µg/Kg   | Y               | 1.5 µg/Kg             | All samples were >>> BAL - No Action required |                  |
| Method Blank | BZ#44 0.257 J µg/Kg | Y               | 1.285 µg/Kg           | All samples were >>> BAL - No Action required |                  |
| Method Blank | BZ#52 0.443 µg/Kg   | Y               | 2.215 µg/Kg           | All samples were >>> BAL - No Action required |                  |

Comments:

*SRM*: NY/NJ Waterway Sediment. %Rec for Congeners in SRM were all within 40-140%; therefore, no Action required.

*MS/MSD*: performed on sample 500525. Sample, MS and MSD were analyzed at DF=500 ; therefore, spike level (~7 µg/Kg) was too low to be able to evaluate MS/MSD recovery (most recoveries were 0%). Replicate precision (sample, MS & MSD) reasonable (RPD <30%) for all 18 NOAA Congeners; therefore, No Action required.

*FD*: there were no field duplicates associated with the samples in this SDG - see the other LTMV for FD sample analysis.

An investigation by NEH into previous reporting of LTM data by Battelle indicated that data were surrogate recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting, Alpha's process for reporting, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events.

For samples where the surrogates are not recovered because of the dilution made for analysis of the sample, a DV Comment was added to the validated database file "K2" to indicate that the reported value was not surrogate recovery corrected. For samples with surrogates recovered, a separate excel worksheet has been constructed (Surrogate Recovery Correction \_L09XXXX.xls) showing the lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. Non-detects are reported by Alpha at the Reporting Limit (RL) consistent with the QAPP. Since non-detects will not be comparable between Alpha and Battelle because the basis for the non-detects are different (MDL vs. RL), non-detects and reporting limits are not surrogate recovery corrected in the LTMV data.

For this SDG, three samples, 501225, 501425, and 502825, reported surrogate recoveries. The surrogate corrected values, as shown in Surrogate Recovery Correction\_L0912896.pdf, replaced the Lab Result values in the validated database file, the data were qualified "K" to indicate this change to the Lab Result values, and a DV Comment was added, "K1", to indicate that the Reported result was recovery corrected.

Date: ~~3/29/10~~  
Data Reviewer: Nancy C. Rothman, Ph.D.

New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist

Lab Project: L0912896

Lab: Alpha Analytical

Comments:

The lab reported results for 18 NOAA Congeners + 2 surrogates. All samples were analyzed at DF>1 except for sample 502825; therefore, all RLs for individual Congeners were above the PQLs requested in QAPP Table 1-3 for these diluted sample. The RLs for sample 502825 were < RLs and PQLs requested in the QAPP; therefore, sensitivity was acceptable for these data.

---

The narrative did not raise any issues affecting quality that were not already addressed.

---

5 results were reported at levels < RL and were flagged "J" by the lab. These 5 results were accepted within Indeterminate bias due to uncertainty in quantitation at a level below the instrument calibration range

---

Qualifiers : All data were reported with "D" qualifiers to indicate results reported from a dilution analysis. As instructed by Battelle, these "D" qualifiers were not removed

---

Date: ~~3/29/10~~  
Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912896

Lab: Alpha Analytical

**ACTIONS:**

Preservation: Cooled to  $4 \pm 2^\circ\text{C}$ . Sediments may be frozen for up to 1 year to preserve sample prior to extraction. If temperature outside criteria, use professional judgment.

HT: Extraction: waters -7d <HT< 14 d, J det/ J NDs; HT >14 d, J det/R ND

Extraction: sediment - 14d <HT< 28 d, J det/ J NDs; HT >28 d, J det/R ND (freezing arrests HT)

Analysis of extract: 40d < Extract HT < 60d, J det/ J NDs; Extract HT > 60d; J det/ R NDs

Surrogates: % Recovery > 130%, J det/Accept ND;  $10\% \leq$  % Recovery < 50%, J det/J NDs; Recovery < 10%, J det/R NDs.

LCS/LCSD: %Rec<10%, J det/ R NDs;  $10\% < \% \text{Rec} < 40\%$ , J det/ J NDs; %Rec >140%, J det/Accept NDs. RPD > 30%, J det/UJ NDs.

MS/MSD: %Rec<10%, J det/ R NDs;  $10\% < \% \text{Rec} < 40\%$ , J det/ J NDs; %Rec >140%, J det/Accept NDs- Unspiked Sample only. RPD > 30%, J det/UJ NDs.

FD: RPD > 30% (waters) or 50% (sediment) for results > 2 x RL, J det/UJ NDs. Use professional judgment for values < 2 x RL.

MBs: If contamination in blank(s) exists, Blank Action Level (BAL)= 5 x Level in Blank (on a sample-equivalent basis). If a sample result is < RL and < BAL, negate (U) result at RL; if value > RL but < BAL, negate (U) result at level reported; if value > BAL, no Action.

RLs: Verify RLs are sample-specific and meet PQL given in QAPP Addendum 2009 UFP - Worksheet #15. If result > upper calibration range, J result; if

Other Data qualified J by lab stays as J; data qualified E by lab becomes J; data qualified U by lab stays U; data qualified P by lab becomes J; data qualified B becomes

Qualifiers: either U or J based on actions taken for Method Blank (MB)

% solids:  $10\% < \% \text{ solids} < 30\%$ , J det/R ND; % solids < 10%, R detects and NDs.

**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated

**Reference:** Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, Massachusetts, September 2009 and Region I, EPA-NE Pesticide/PCB Data Validation Functional Guidelines - Part III, Draft February 2004

Laboratory Data were reported using BZ# only - the following table shows a cross reference of BZ# to Congener Name and CAS Number

| Congener Name                   | BZ #   | CAS Number |
|---------------------------------|--------|------------|
| 2,4'-Dichlorobiphenyl           | BZ#8   | 34883-43-7 |
| 2,2',5'-Trichlorobiphenyl       | BZ#18  | 37680-65-2 |
| 2,4,4'-Trichlorobiphenyl        | BZ#28  | 7012-37-5  |
| 2,2',3,5'-Tetrachlorobiphenyl   | BZ#44  | 41464-39-5 |
| 2,2',5,5'-Tetrachlorobiphenyl   | BZ#52  | 35693-99-3 |
| 2,3',4,4'-Tetrachlorobiphenyl   | BZ#66  | 32598-10-0 |
| 2,2',4,5,5'-Pentachlorobiphenyl | BZ#101 | 37680-73-2 |
| 2,3,3',4,4'-Pentachlorobiphenyl | BZ#105 | 32598-14-4 |
| 2,3',4,4',5-Pentachlorobiphenyl | BZ#118 | 31508-00-6 |

| Congener Name                            | BZ #   | CAS Number |
|--|--------|------------|
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | BZ#128 | 38380-07-3 |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | BZ#138 | 35065-28-2 |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | BZ#153 | 35065-27-1 |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | BZ#170 | 35065-30-6 |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | BZ#180 | 35065-29-3 |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | BZ#187 | 52663-68-0 |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | BZ#195 | 52663-78-2 |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | BZ#206 | 40186-72-9 |
| Decachlorobiphenyl                       | BZ#209 | 52663-77-1 |

Date: ~~3/29/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

Lab: Alpha Analytical

Date Sampled: 9/22/09 through 9/27/09

Analysis: Total Organic Carbon (TOC) by modified EPA SW-846 Method 9060

No. Samples

16

Matrix:

Sediment

| QC Met Criteria? | Preservation<br>4 ± 2°C | HT<br>28 days | RL<br>0.01%<br>(100 mg/Kg) | MB<br>< RL                        | Solid LCS =<br>SRM<br>75-125% R | MS<br>75-125% R | MD<br>RPD ≤ 25% | FD<br>RPD ≤ 50% | % Solids<br>> 30% | Other |
|------------------|-------------------------|---------------|----------------------------|-----------------------------------|---------------------------------|-----------------|-----------------|-----------------|-------------------|-------|
| Yes              | √                       | √             | √                          |                                   | √                               | √               | √               | NA              | √                 |       |
| No               |                         |               |                            | MB > RL but samples > level in MB |                                 |                 |                 |                 |                   |       |

Calibration criteria: Unless otherwise noted in the laboratory narrative, it was assumed that all initial and continuing calibration verifications (ICV/CCV) and initial and continuing calibration blank (ICB/CCB) results were acceptable (met LTM V QAPP 2009 requirements). In addition, RPD < 25% for two replicates of each sample.

- Method Modification: Laboratory analyzed two replicates (burns) for TOC by Method 9060A rather than 4 (as in the method); this is consistent with LTMV QAPP requirements.

Samples were received intact. TOC analysis was performed on the samples "as-received" (i.e., not on "air-dried" sediments). Samples were frozen upon receipt to arrest holding time. Therefore, analyses, conducted on 10/26/09, were considered to have met HT criteria. No Action required.

MS/MD site sample used for QC: 500525. Duplicate burns of MS resulted in acceptable recovery. Sample/MD reported one burn with RPD > 25%; however, a comparison of the average sample and average MD TOC of this sample gave RPD < 25% - No action taken based on professional judgment.

Method blank reported low level TOC (average = 0.0195 %). Since all samples reported TOC > this level, no action required.

Sample/FD site sample IDs: There were no FDs associated with the samples in this SDG - see other LTMV SDGs for FDs

Replicate (duplicate) precision TOC results of each sample all had RPD < 25% - all replicates acceptable - No Action.

Data users should compute the arithmetic average of the two TOC replicate burns for each sample and use this average as the valid TOC result for that sample.

**Data Package Completeness:**

1. Were all required forms (results, summary QC, COC), as required to validate the data in accordance with EPA Region 1 present in the data package? **Yes**
2. Were all result forms for all samples listed on the chain-of-custody present in data package? **Yes**

If No, explain and request resubmittals:

Date: 9/17/10  
Data Reviewer: \_\_\_\_\_

Nancy C. Rothman, Ph.D.

## TOC Tier I+ Data Validation Checklist

Lab: Alpha Analytical

**Data Quality / Usability Issues:**

1. Did the Laboratory Narrative contain any issues which may affect data quality or usability that have not been already addressed on page 1? **No.**

If Yes, explain.

2. Explain further any actions taken based on summary QC, as necessary, below.

No further actions required.

**All TOC data were accepted as reported by the laboratory and unchanged as a consequence of this data validation review.**

**QC Actions:**

Pres./HT: HT exceedance: J detects; Non-detects: R or UJ based on professional judgment. Freezing arrests HT.

Temperature: outside control limits of  $4 \pm 2^\circ\text{C}$ : use professional judgment.

Blanks: Method Blanks and instrument blanks: TOC < RL unless all sample results are > 10 blank level. Detected results < matrix-matched blank level report as "U" (non-detected at level found). Professional judgment used for non-matrix matched blanks (e.g. aqueous blank associated with sediment samples).

Calibration Criteria: Assume acceptable unless narrated. Exceedances of any calibration criteria will affect accuracy of the data: J detects and UJ non-detects. Severe exceedances of calibration criteria, to be determined based on professional judgment, may require rejection, R, of data.

Assume acceptable unless narrated. If narrated as exceeded: %Recoveries < lower control limit: J / UJ. %Recoveries > upper control limit: J detects.

ICV/CCV: If severe exceedance <50% recovery: R non-detects.

LCS/SRM: %Recoveries < lower control limit: J / UJ. %Recoveries > upper control limit: J detects. %Recoveries < 50%, may R non-detects & J detects but use professional judgment to accept results if MS is in-control indicating acceptable accuracy in sample matrix.

MS: %Recoveries < lower control limit: J / UJ. %Recoveries > upper control limit: J detects. %Recoveries < 30%, may R non-detects & J detects but use professional judgment if sample concentration > 2x spike level.

MD: Results > 5xRL: RPD >25%: J / UJ associated results in batch - to be determined using professional judgment.

Results < 5xRL: difference >  $\pm 2xRL$ , J / UJ associated results in batch - to be determined using professional judgment.

FD: Results > 5xRL: RPD >50%: J / UJ FD results only. Results < 5xRL: difference >  $\pm 4xRL$ , J/UJ FD results only.

% Solids: 10% < % solids < 30%, J detects/R non-detects; % solids < 10%, R all results.

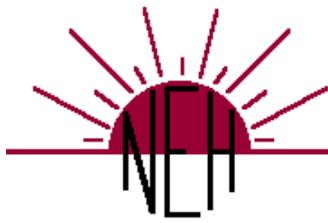
**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value; R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate. QC Limits based on EPA Region 1 Inorganic DV guidance and LTM V QAPP 2009.

**References:** Quality Assurance Project Plan; New Bedford Harbor Long Term Monitoring V; New Bedford, Massachusetts (September 2009); Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996; USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review; Publication EPA 540-R-04-004, October 2004.

Date: 7/17/10

Data Reviewer:

Nancy C. Rothman, Ph.D.



**Data Validation Report**  
**EPA Region I Tier I+**  
**18 NOAA PCB Congeners by 8270C and TOC by Method 9060**

**Client/Company:** Woods Hole Group, Inc. (WHG)

**Site/Project Name:** New Bedford Harbor Superfund Site – Long Term Monitoring (LTM) V

**Laboratory:** Alpha Analytical – Mansfield, MA

**Lab Project Number(s):** L0912896

**Date(s) of Collection:** September 22, 2009 through September 27, 2009

**Number / Type  
Samples & Analyses** 16 sediment samples for 18 NOAA PCB Congeners by EPA SW-846  
Method 8270C and Total Organic Carbon (TOC) by Method 9060

**Senior Data Reviewers:** Nancy C. Rothman, PhD, New Environmental Horizons, Inc.  
Susan D. Chapnick, New Environmental Horizons, Inc.

**Date Completed:** March 30, 2010  
**Revised:** *April 12, 2010*

*This report was revised to include the Tier I+ review of TOC data.*

This EPA Region I Tier I+ validation for 18 NOAA PCB Congeners and TOC was performed with the following intentions: 1) to determine if the data were generated and reported in accordance with the *Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, MA*, prepared by Woods Hole Group, Inc., September 2009 (LTMV QAPP); Region I, *EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses*, December 1996, including *Part III – Pesticide/PCB Data Validation Functional Guidelines*, Draft February 2004; 2) to determine if the data met project data quality objectives for acceptable accuracy, precision, sensitivity; and technical usability; and 3) to generate an electronic deliverable of validated results with project-specific data validation qualifiers added.

The Data Validation Report consists of three parts:

- This Data Validation Report letter summarizing the actions taken;
- The database file of validated sample results with validation qualifiers, bias, and comments added based on actions taken; and
- Data Validation Checklists for TOC and PCB Congeners including the Surrogate Recovery Correction worksheet completed during this validation to document the Tier I+ review. The Checklists are an integral part of the DV Report as they contain comprehensive details of all quality control (QC) reviewed, the acceptance criteria used, and the professional judgment and actions taken.

## I. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification analytical parameters reviewed and the sample type (e.g., field sample, field duplicate (FD), field equipment blank (EB), as applicable), are listed below in Table 1.

Table 1. Sample Descriptions and Analytical Parameters Validated

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type  |
|-----------|---------------|-----------------|----------|------------------------------------|--------------|
| 500125    | L0912896-01   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500225    | L0912896-02   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500325    | L0912896-03   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500425    | L0912896-04   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500525    | L0912896-05   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500625    | L0912896-06   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500725    | L0912896-07   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500825    | L0912896-08   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 500925    | L0912896-09   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 501025    | L0912896-10   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 501125    | L0912896-11   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |

Table 1. Sample Descriptions and Analytical Parameters Validated - *continued*

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type  |
|-----------|---------------|-----------------|----------|------------------------------------|--------------|
| 501225    | L0912896-12   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 502825    | L0912896-13   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 501425    | L0912896-14   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 501525    | L0912896-15   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 501625    | L0912896-16   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |

Analytical method references:

18 NOAA Congeners: *Determination of PCB Homologs, Individual Congeners, and Pesticides by Gas Chromatography/Mass Spectrometry in the Select Ion Monitoring (SIM) Mode (EPA 680 & 8270C)*, Alpha SOP O-015, Rev. 2, June 19, 2006.

TOC: SW-846 Method 9060 modified, Alpha SOP W-028

<sup>1</sup> Grain Size analysis was also performed on these samples; however, data validation for this parameter was not required. TOC analysis was performed on “as-received” sediments while the 18 NOAA Congeners were performed using “air-dried” sediments.

## II. Data Validation Report Summary

This Data Validation Report represents a Tier I+ validation of the 18 NOAA PCB Congener and TOC sample results and summary QC (method and matrix), which were used to evaluate accuracy, precision, and sensitivity compared to the NBH LTMV QAPP requirements.

The following QC elements, as applicable to the analytical methods, were reviewed:

- Data package completeness and reporting protocols
- Sample receipt, holding times and preservation criteria
- Blank results including Method Blanks, Equipment Blanks, & Trip blanks
- Laboratory Control Sample (LCS) recoveries / LCS Duplicate Recoveries
- Standard Reference Material (SRM) Recoveries
- Surrogate Recoveries
- Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Recoveries
- MS/MSD, LCS/LCSD, sample/Laboratory Duplicate (LD), or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)
- Sample result reporting (including compound lists, reporting limits, and units)

- Calibration criteria\* (including tune criteria, initial calibration and continuing calibration verification)
- Internal Standard (IS) Recoveries\*
- Retention Time windows\*
- Other method-specific QC if applicable and reported\* (e.g., serial dilution results for metals)
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

\* This QC element is reviewed associated with the Tier II-type validation only. For Tier I+ validations this QC element is assumed to be acceptable unless otherwise noted in the laboratory narrative.

Based on this Tier I+ validation of the 18 NOAA PCB Congeners and TOC, all results were considered usable for project decisions based on a comparison to the NBH LTMV QAPP requirements and with the understanding of the potential uncertainty (bias) in the qualified results summarized in Table 2. NEH generated electronic validated results based on the project database file received from WHG for these data, by updating the following database fields for field samples and field QC only: VALID\_QUAL, VALIDATION\_LEVEL, VALIDATION, VALID\_DATE, BIAS, and DV\_COMMENT.

The remainder of this report documents “exceptions” to the NBH LTMV QAPP criteria or clarifications of data reported. QC elements not discussed below met all QAPP criteria. The full documentation of all QC elements reviewed during the Tier I+ validation are presented in the attached Data Validation Checklists.

### **Sample Receipt and Holding Time**

The sediment samples were received at the laboratory intact in five shipments at 2.6°C to 4.1°C. Aliquots of the “as-received” samples were analyzed for TOC, Grain Size, and percent solids. Samples were frozen upon receipt to arrest holding time for TOC analysis. All samples had percent solids content of 29-82%; therefore, these sediment samples were air-dried, as required by the QAPP, prior to Congener analysis. After air-drying, the percent solids content for all samples was greater than 93%.

### **Accuracy**

The Method Blank reported detected results for three of the 18 NOAA Congeners and low level TOC; however, a comparison of the levels reported in the method blank with the levels reported in the samples indicated that blank action was not required.

There was no Equipment Blank required to be collected along with these sediment samples.

All 18 NOAA Congeners recovered within criteria in the LCS and LCSD except for Decachlorobiphenyl (BZ#209), which recovered low in both the LCS and LCSD. The results for Decachlorobiphenyl (BZ#209) were estimated (UJ) with a possible low bias in all sixteen sediments due to the low LCS/LCSD recoveries, as listed in Table 2.

Congener recoveries in the LCS or LCSD were also outside criteria for 2,2',5,5'-Tetrachlorobiphenyl (BZ#52) and 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (BZ#206); however, since one spiked sample recovery was acceptable and since the RPD between the LCS and LCSD was acceptable for these two Congeners, no action to qualify sample data was taken based on professional judgment.

Congener recoveries in the MS/MSD analysis conducted on sample 500525 could not be evaluated since the level of the spike was too low compared to the concentration of PCB Congeners in the field sample (i.e., the sample, MS and MSD were all analyzed at dilution factor (DF) = 500, at this high dilution, the relatively low matrix spike level could not be detected). Therefore, no action was taken based on the MS/MSD recoveries. TOC recovery in the MS analysis of sample 500525 was acceptable, indicating acceptable accuracy for TOC in the site matrix.

The Standard Reference Material for PCB Congeners (SRM NY/NJ Waterway Sediment) and TOC SRM reported acceptable recoveries for all Congeners and TOC certified in these SRMs.

### **Precision**

LCS/LCSD precision was acceptable for all 18 NOAA Congeners indicating acceptable precision in the laboratory analysis of these samples.

MS/MSD precision in the analysis of sample 500525 was acceptable for all 18 NOAA Congeners. All TOC analyses were performed in replicate (duplicate burns), as a method modification consistent with the site QAPP requirements. Sample/MD precision was high for TOC in one set of replicates. Since the average TOC value for 500525 and the average value for the MD had acceptable precision, no action was taken based on professional judgment. Precision between all replicates of TOC reported for each sample was acceptable. These results indicate acceptable precision and representativeness of these sediments for analysis of the NOAA PCB Congeners and TOC.

There were no Field Duplicates (FD) associated with the samples in this SDG. Three sets of Sample/FD were collected and are reported for the overall LTMV program. Data users are directed to the other LTMV DV reports for FD information.

### **Sensitivity & Reporting**

All samples met sensitivity requirements for PCB Congeners and TOC as indicated in NBH LTMV QAPP Table 1-3.

Data users should compute the average of the TOC replicate results (duplicate burns) for each sample and use this arithmetic average as the valid result for TOC.

An investigation by NEH into previous reporting of LTM data by Battelle indicated that Congener data were surrogate-recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate-recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting previous LTM data (LTMIV and prior monitoring data), Alpha's process for reporting LTMV results, and recommendations for adjustment of the current

LTMV data so that these data may be comparable to the data from previous sampling events reported by Battelle.

For Congener samples where the surrogates are not recovered because of analytical dilutions or when results were non-detect, the DV\_COMMENT "K2" was added to the validated database file to indicate that the reported value was not surrogate-recovery corrected.

For Congener samples where surrogate-recovery correction was performed, a separate Surrogate Recovery Correction excel worksheet was constructed (as part of the Data Validation Checklist process) showing the original lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. For surrogate-corrected results, the project database file was updated as follows:

1. The surrogate-corrected value, as shown in the Surrogate Recovery Correction worksheet, replaced the lab RESULT value in the validated database file;
2. The qualifier "K" was added to the VALID\_ QUAL field to identify the result as surrogate-recovery corrected; and
3. "K1" was added to the DV\_COMMENT field as the DV code to further indicate that the reported result was surrogate-recovery corrected.

Non-detects for Congeners were reported by Alpha at the Reporting Limit (RL), consistent with the LTMV QAPP requirements. Since non-detected results are not comparable between Alpha and Battelle because the basis for the non-detects are different (RL vs. MDL), non-detects and reporting limits were not surrogate-recovery corrected in the LTMV data.

For this SDG, three Congener samples, 501225, 501425, and 502825, reported surrogate recoveries. Surrogate-recovery correction was performed for these three samples, as documented in *Surrogate Recovery Correction\_L0912896*. Actions taken are listed below in Table 2.

Results reported below the sample-specific RLs are considered uncertain because they are below the calibration range. During this review, data below the sample-specific RLs were qualified as estimated (J), as shown in Table 2, and as described in the Data Validation Checklist.

The laboratory reported all results from DF > 1 analyses with a "D" qualifier. At Battelle's request, these "D" qualifiers were maintained during the DV process.

Table 2. Summary of Data Validation Actions

| Field Sample ID                                     | Analyte  | Qualifier | Bias | Validation Comments                                |
|---|--|-----------|------|--|
| 501225<br>501425 &<br>502825                        | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl &<br>Decachlorobiphenyl | DK / K    |      | Reported value is surrogate recovery corrected     |
| All samples except:<br>501225<br>501425 &<br>502825 | All Congeners  | D/ DJ/ DU |      | Reported value is not surrogate recovery corrected |

Table 2. Summary of Data Validation Actions - continued

| Field Sample ID    | Analyte                                  | Qualifier | Bias | Validation Comments   |
|--------------------|--|-----------|------|---|
| 500125 &<br>500425 | 2,3,3',4,4'-Pentachlorobiphenyl          | DJ        | I    | Reported value is not surrogate recovery corrected + result uncertain below the calibration range |
| 500125 &<br>500525 | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | DJ        | I    | Reported value is not surrogate recovery corrected + result uncertain below the calibration range |
| 501225 &<br>502825 | 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | DU / U    |      | Reported value is not surrogate recovery corrected  |
| 501425             | 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | DJK       | I    | Reported value is surrogate recovery corrected + result uncertain below the calibration range     |
| All samples        | Decachlorobiphenyl - Homologue           | DUJ / UJ  | L    | Reported value is not surrogate recovery corrected + Low LCS recovery                             |

*Qualifiers: U = Analyte is non-detect at or above the sample-specific reporting limit (RL); UJ = Non-detect is estimated at the RL; J = Result is estimated; EB = analyte detected in associated equipment blank; EMPC = estimated maximum possible concentration (PCB congeners only); R = Result is rejected and is unusable for project decisions; D = result reported from a dilution analysis (added by laboratory); K = Result is Surrogate Recovery Corrected.*

*Bias: L = Low; H = High; I = Indeterminate*

*Abbreviations used in Table 2:*

*LCS = Laboratory Control Sample*

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                          | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        | DETECT_LIMIT |
|---------|----------|---------------|--------------------------------------|-----|-------------------------------|------------|----------|-----------------------------|-------------|--------------|
| 501225  | 10       | 34883-43-7    | 2,4'-Dicb                            | 8   | DBOB                          | 85.6       | D        | 126                         | UG/KG       | 3.34         |
| 501225  | 10       | 37680-65-2    | 2,2',5'-Tricb                        | 18  | DBOB                          | 505        | D        | 743                         | UG/KG       | 3.34         |
| 501225  | 10       | 7012-37-5     | 2,4,4'-Tricb                         | 28  | DBOB                          | 838        | D        | 1232                        | UG/KG       | 3.34         |
| 501225  | 10       | 41464-39-5    | 2,2',3,5'-Tetracb                    | 44  | DBOB                          | 296        | D        | 435                         | UG/KG       | 3.34         |
| 501225  | 10       | 35693-99-3    | 2,2',5,5'-Tetracb                    | 52  | DBOB                          | 1120       | D        | 1647                        | UG/KG       | 3.34         |
| 501225  | 10       | 32598-10-0    | 2,3',4,4'-Tetracb                    | 66  | DBOB                          | 97         | D        | 143                         | UG/KG       | 3.34         |
| 501225  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentacb                  | 101 | DBOB                          | 412        | D        | 606                         | UG/KG       | 3.34         |
| 501225  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentacb                  | 105 | BZ198                         | 36.9       | D        | 42                          | UG/KG       | 3.34         |
| 501225  | 10       | 31508-00-6    | 2,3',4,4',5'-Pentacb                 | 118 | BZ198                         | 323        | D        | 371                         | UG/KG       | 3.34         |
| 501225  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexacb                | 128 | BZ198                         | 46.5       | D        | 53                          | UG/KG       | 3.34         |
| 501225  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexacb                | 138 | BZ198                         | 254        | D        | 292                         | UG/KG       | 3.34         |
| 501225  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexacb                | 153 | BZ198                         | 205        | D        | 236                         | UG/KG       | 3.34         |
| 501225  | 10       | 35065-30-6    | 2,2',3,3',4,4',5'-Heptacb            | 170 | BZ198                         | 34.3       | D        | 39                          | UG/KG       | 3.34         |
| 501225  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptacb             | 180 | BZ198                         | 40.9       | D        | 47                          | UG/KG       | 3.34         |
| 501225  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptacb             | 187 | BZ198                         | 33.8       | D        | 39                          | UG/KG       | 3.34         |
| 501225  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octacb            | 195 | BZ198                         | 3.34       | DU       | NA                          | UG/KG       | 3.34         |
| 501225  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonacb         | 206 | BZ198                         | 5.74       | D        | 6.6                         | UG/KG       | 3.34         |
| 501225  | 10       | 2051-24-3     | DecaCB - Homologue                   | 209 | BZ198                         | 3.34       | DU       | NA                          | UG/KG       | 3.34         |
| 501225  | 10       | CS-10386-84-2 | Dbob                                 |     |                               | 68         | D        | 68                          | PCT_RE<br>C |              |
| 501225  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octacb (Obsolete) | 198 |                               | 87         | D        | 87                          | PCT_RE<br>C |              |
| 501425  | 20       | 34883-43-7    | 2,4'-Dicb                            | 8   | DBOB                          | 178        | D        | 209                         | UG/KG       | 6.7          |
| 501425  | 20       | 37680-65-2    | 2,2',5'-Tricb                        | 18  | DBOB                          | 1080       | D        | 1271                        | UG/KG       | 6.7          |
| 501425  | 20       | 7012-37-5     | 2,4,4'-Tricb                         | 28  | DBOB                          | 2220       | D        | 2612                        | UG/KG       | 6.7          |
| 501425  | 20       | 41464-39-5    | 2,2',3,5'-Tetracb                    | 44  | DBOB                          | 892        | D        | 1049                        | UG/KG       | 6.7          |
| 501425  | 20       | 35693-99-3    | 2,2',5,5'-Tetracb                    | 52  | DBOB                          | 2860       | D        | 3365                        | UG/KG       | 6.7          |
| 501425  | 20       | 32598-10-0    | 2,3',4,4'-Tetracb                    | 66  | DBOB                          | 296        | D        | 348                         | UG/KG       | 6.7          |
| 501425  | 20       | 37680-73-2    | 2,2',4,5,5'-Pentacb                  | 101 | DBOB                          | 1040       | D        | 1224                        | UG/KG       | 6.7          |
| 501425  | 20       | 32598-14-4    | 2,3,3',4,4'-Pentacb                  | 105 | BZ198                         | 104        | D        | 95                          | UG/KG       | 6.7          |
| 501425  | 20       | 31508-00-6    | 2,3',4,4',5'-Pentacb                 | 118 | BZ198                         | 962        | D        | 875                         | UG/KG       | 6.7          |
| 501425  | 20       | 38380-07-3    | 2,2',3,3',4,4'-Hexacb                | 128 | BZ198                         | 167        | D        | 152                         | UG/KG       | 6.7          |
| 501425  | 20       | 35065-28-2    | 2,2',3,4,4',5'-Hexacb                | 138 | BZ198                         | 792        | D        | 720                         | UG/KG       | 6.7          |
| 501425  | 20       | 35065-27-1    | 2,2',4,4',5,5'-Hexacb                | 153 | BZ198                         | 537        | D        | 488                         | UG/KG       | 6.7          |
| 501425  | 20       | 35065-30-6    | 2,2',3,3',4,4',5'-Heptacb            | 170 | BZ198                         | 109        | D        | 99                          | UG/KG       | 6.7          |
| 501425  | 20       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptacb             | 180 | BZ198                         | 132        | D        | 120                         | UG/KG       | 6.7          |
| 501425  | 20       | 52663-68-0    | 2,2',3,4',5,5',6-Heptacb             | 187 | BZ198                         | 93         | D        | 85                          | UG/KG       | 6.7          |
| 501425  | 20       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octacb            | 195 | BZ198                         | 6.64       | DJ       | 6                           | UG/KG       | 6.7          |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                          | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        | DETECT_LIMIT |
|---------|----------|---------------|--------------------------------------|-----|-------------------------------|------------|----------|-----------------------------|-------------|--------------|
| 501425  | 20       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonacb         | 206 | BZ198                         | 11.5       | D        | 10                          | UG/KG       | 6.7          |
| 501425  | 20       | 2051-24-3     | DecaCB - Homologue                   | 209 | BZ198                         | 6.7        | DU       | NA                          | UG/KG       | 6.7          |
| 501425  | 20       | CS-10386-84-2 | Dbob                                 |     |                               | 85         | D        | 85                          | PCT_RE<br>C |              |
| 501425  | 20       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octacb (Obsolete) | 198 |                               | 110        | D        | 110                         | PCT_RE<br>C |              |
| 502825  | 1        | 34883-43-7    | 2,4'-Dicb                            | 8   | DBOB                          | 5.67       |          | 11                          | UG/KG       | 0.333        |
| 502825  | 1        | 37680-65-2    | 2,2',5-Tricb                         | 18  | DBOB                          | 27.9       |          | 56                          | UG/KG       | 0.333        |
| 502825  | 1        | 7012-37-5     | 2,4,4'-Tricb                         | 28  | DBOB                          | 51.2       |          | 102                         | UG/KG       | 0.333        |
| 502825  | 1        | 41464-39-5    | 2,2',3,5'-Tetracb                    | 44  | DBOB                          | 22.1       |          | 44                          | UG/KG       | 0.333        |
| 502825  | 1        | 35693-99-3    | 2,2',5,5'-Tetracb                    | 52  | DBOB                          | 70.1       |          | 140                         | UG/KG       | 0.333        |
| 502825  | 1        | 32598-10-0    | 2,3',4,4'-Tetracb                    | 66  | DBOB                          | 7.91       |          | 16                          | UG/KG       | 0.333        |
| 502825  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentacb                  | 101 | DBOB                          | 30.5       |          | 61                          | UG/KG       | 0.333        |
| 502825  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentacb                  | 105 | BZ198                         | 5.14       |          | 8.3                         | UG/KG       | 0.333        |
| 502825  | 1        | 31508-00-6    | 2,3',4,4',5-Pentacb                  | 118 | BZ198                         | 26.4       |          | 43                          | UG/KG       | 0.333        |
| 502825  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexacb                | 128 | BZ198                         | 4.77       |          | 7.7                         | UG/KG       | 0.333        |
| 502825  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexacb                | 138 | BZ198                         | 22.3       |          | 36                          | UG/KG       | 0.333        |
| 502825  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexacb                | 153 | BZ198                         | 17         |          | 27                          | UG/KG       | 0.333        |
| 502825  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptacb             | 170 | BZ198                         | 2.78       |          | 4.5                         | UG/KG       | 0.333        |
| 502825  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptacb             | 180 | BZ198                         | 3.73       |          | 6.0                         | UG/KG       | 0.333        |
| 502825  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptacb             | 187 | BZ198                         | 3.58       |          | 5.8                         | UG/KG       | 0.333        |
| 502825  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octacb            | 195 | BZ198                         | 0.333      | U        | NA                          | UG/KG       | 0.333        |
| 502825  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonacb         | 206 | BZ198                         | 0.466      |          | 0.8                         | UG/KG       | 0.333        |
| 502825  | 1        | 2051-24-3     | DecaCB - Homologue                   | 209 | BZ198                         | 0.333      | U        | NA                          | UG/KG       | 0.333        |
| 502825  | 1        | CS-10386-84-2 | Dbob                                 |     |                               | 50         |          | 50                          | PCT_RE<br>C |              |
| 502825  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octacb (Obsolete) | 198 |                               | 62         |          | 62                          | PCT_RE<br>C |              |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912897

Lab: Alpha Analytical

Date Sampled: 9/22/09 through 9/27/09

Analysis: 18 NOAA PCB Congeners by GC/MS-SIM

No. Samples

16 + 1FD

Matrix:

Sediments

| Data Element | Preservation & HT | Surrogates %R 50-130%   | LCS/LCSD                                | MS/MSD               | FD                         | MB                           | RL                          | Issues with Qualifiers?                                       | Other  |
|--------------|-------------------|---|---|----------------------|----------------------------|------------------------------|-----------------------------|---|--|
|              |                   |   | SRM %R 40-140% RPD ≤ 30%                | %R 40-140% RPD ≤ 30% | RPD ≤ 30% SW RPD ≤ 50% SED | < RL or < 5x Conc. in sample | meets QAPP req. for matrix? |   |  |
| Yes          | √                 |   |   | √                    | √                          | √                            |                             |   |  |
| No           |                   | Estimate (J/UJ) all results in 502425, 502625, 503125, & 503225 | Estimate (J) BZ28 & BZ52 in all samples |                      |                            |                              | Estimate (J) 1 result < RL  | Data qualified "D" by the lab for all samples analyzed DF > 1 | Surrogate recovery correct 8 samples - see "Surrogate Recovery Correction _L0912897.pdf" and page 4 of this report for details |

**Did the Laboratory Narrative contain any issues which may affect data quality? Yes; however, all issues were reported in the summary data.**

**Were the %solids acceptable (>30%)? Yes all > 83% solids after air-drying. Prior to air-drying, % solids were 33-81%.**

*The data package consisted of a laboratory narrative, data sheets for samples, Method Blanks (MB), laboratory control samples (LCS), Matrix Spike/Matrix Spike Duplicates (MS/MSD), and the executed chain-of-custody. Summary information for initial and continuing calibrations were not present nor were raw data for samples and quality control (QC) reported. This Tier I+ review assumed that initial calibrations and qualitative and quantitative determination of the 18 NOAA Congeners were acceptable unless an issue was raised in the laboratory narrative.*

**Comments:**

Samples were received intact at 2.1C to 4.1C in 7 shipments on the day of or day after sample collection (e.g., samples collected on 9/24 were received on 9/25/09). COC seals were absent from coolers; however, these were picked up from the site by a courier and delivered directly to the lab.

Samples were analyzed for % solids, TOC, and Grain size. All samples were also air-dried and subsequently analyzed for %solids - air-dried and 18 NOAA Congeners

*HT: Air-dried samples were extracted on 10/5/09 and analyzed by 10/23/09 - HT met - No action required.*

*Surrogates: both surrogates (BZ19-C13 and BZ202-C13) were diluted out (0% recovery) due to dilutions made for analysis of the samples (DF ranged from 20 to 1000) for all samples except 501725, 502125, 502225, 502425, 502625, 502725, 503125, & 503225. For these eight samples, surrogates were recovered within criteria except DBOB recovered low (34%) in sample 502425, DBOB recovered low (49%) in sample 502625, DBOB recovered low (43%) in sample 503125, and BZ198 recovered high (175%) in sample 503225.*

*\*ACTION: All results estimated (J and UJ) in samples 502425, 502625, 503125, and 503225 due to conflicting Surrogate recoveries.*

*LCS: %Rec for LCS and LCSD were all within 40-140% for all 18 NOAA Congeners spiked and RPDs between LCS and LCSD all OK except BZ28 LCS recovery high (185%) and RPD high (45%) - LCSD OK; and BZ52 LCS & LCSD high (168% & 147%) RPD OK.*

*\*ACTION: BZ28 estimated (J) in all 17 sediment samples due to high LCS recovery and LCS/LCSD imprecision and & BZ52 estimated (J) due to high LCS/LCSD recoveries.*

Date: ~~3/30/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912897

Lab: Alpha Analytical

Blank Action:                      Blanks Reviewed: Method Blank  
No EB associated with samples

| Blank ID     | Contaminant / Level  | Matrix Related? | Action Level / Action | Sample and Reported Result                     | Corrected Result |
|--------------|----------------------|-----------------|-----------------------|--|------------------|
| Method Blank | BZ#8 0.217 J µg/Kg   | Y               | 1.085 µg/Kg           | All samples were >>>> BAL - No Action required |                  |
| Method Blank | BZ#18 0.857 µg/Kg    | Y               | 4.285 µg/Kg           | All samples were >>>> BAL - No Action required |                  |
| Method Blank | BZ#28 1.35 µg/Kg     | Y               | 6.75 µg/Kg            | All samples were >>>> BAL - No Action required |                  |
| Method Blank | BZ#44 0.493 µg/Kg    | Y               | 2.465 µg/Kg           | All samples were >>>> BAL - No Action required |                  |
| Method Blank | BZ#52 1.5 µg/Kg      | Y               | 7.5 µg/Kg             | All samples were >>>> BAL - No Action required |                  |
| Method Blank | BZ#101 0.353 µg/Kg   | Y               | 1.765 µg/Kg           | All samples were >>>> BAL - No Action required |                  |
| Method Blank | BZ#153 0.193 J µg/Kg | Y               | 0.965 µg/Kg           | All samples were >>>> BAL - No Action required |                  |
|              |                      |                 |                       |  |                  |
|              |                      |                 |                       |  |                  |
|              |                      |                 |                       |  |                  |

Comments:  
*SRM*: NY/NJ Waterway Sediment. %Rec for Congeners in SRM were all within 40-140% except BZ#128 had 152% recovery. Since the LCS/LCSD recovery was acceptable for this Congener, no action taken to qualify samples data for this SRM result.

*MS/MSD*: performed on sample 501325. Sample, MS and MSD were analyzed at DF=100 ; therefore, spike level (~7 µg/Kg) was too low to be able to evaluate MS/MSD recovery (most recoveries were 0% or >1000%). Replicate precision (sample, MS & MSD) reasonable (RPD <30%) for all 18 NOAA Congeners; therefore, No Action required.

Date: ~~3/30/10~~  
 Data Reviewer: Nancy C. Rothman, Ph.D.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912897

Lab: Alpha Analytical

Comments:

*FD pair:* 502125 & 508035 - a comparison of results shown below

Field Duplicate Evaluation\_ Sample IDs:

Sample = 502125

FD = 508035

| Analyte Name                             | DF= 10*    | Sample<br>µg/Kg | Sample Result |          | FD    | FD Result |          | RPD  | Action |
|--|------------|-----------------|---------------|----------|-------|-----------|----------|------|--------|
|  | RL (µg/Kg) |                 | Q             | Level    | µg/Kg | Q         | Level    |      |        |
| 2,4'-Dichlorobiphenyl                    | 3.49       | 90              |               | > 2 x RL | 111   |           | > 2 x RL | 20.9 | None   |
| 2,2',5'-Trichlorobiphenyl                | 3.49       | 621             |               | > 2 x RL | 795   |           | > 2 x RL | 24.6 | None   |
| 2,4,4'-Trichlorobiphenyl                 | 3.49       | 1750            |               | > 2 x RL | 1470  |           | > 2 x RL | 17.4 | None   |
| 2,2',3,5'-Tetrachlorobiphenyl            | 3.49       | 654             |               | > 2 x RL | 696   |           | > 2 x RL | 6.2  | None   |
| 2,2',5,5'-Tetrachlorobiphenyl            | 3.49       | 1738            |               | > 2 x RL | 2120  |           | > 2 x RL | 19.8 | None   |
| 2,3',4,4'-Tetrachlorobiphenyl            | 3.49       | 154             |               | > 2 x RL | 223   |           | > 2 x RL | 36.6 | None   |
| 2,2',4,5,5'-Pentachlorobiphenyl          | 3.49       | 886             |               | > 2 x RL | 1020  |           | > 2 x RL | 14.1 | None   |
| 2,3,3',4,4'-Pentachlorobiphenyl          | 3.49       | 116             |               | > 2 x RL | 80.9  |           | > 2 x RL | 35.7 | None   |
| 2,3',4,4',5-Pentachlorobiphenyl          | 3.49       | 609             |               | > 2 x RL | 699   |           | > 2 x RL | 13.8 | None   |
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | 3.49       | 102             |               | > 2 x RL | 121   |           | > 2 x RL | 17.0 | None   |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | 3.49       | 513             |               | > 2 x RL | 546   |           | > 2 x RL | 6.2  | None   |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | 3.49       | 358             |               | > 2 x RL | 389   |           | > 2 x RL | 8.3  | None   |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | 3.49       | 78              |               | > 2 x RL | 90.6  |           | > 2 x RL | 14.9 | None   |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | 3.49       | 89              |               | > 2 x RL | 89.8  |           | > 2 x RL | 0.9  | None   |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | 3.49       | 77              |               | > 2 x RL | 85.8  |           | > 2 x RL | 10.8 | None   |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | 3.49       | 3.49            | U             | RL       | 6.99  | U         | RL       | NA   | None   |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | 3.49       | 3.49            | U             | RL       | 6.99  | U         | RL       | NA   | None   |
| Decachlorobiphenyl                       | 3.49       | 3.49            | U             | RL       | 6.99  | U         | RL       | NA   | None   |

\* FD DF = 20 so RLs for FD are these RLs x (20/10)

FD precision was acceptable for all 18 NOAA Congeners. Note, sample 502125 underwent surrogate recovery correction while FD sample 508035 did not because surrogates were diluted out. No Action required.

Date: ~~3/30/10~~  
Data Reviewer: Nancy C. Rothman, Ph.D.

**New Bedford Harbor**  
**18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912897

Lab: Alpha Analytical

Comments:

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An investigation by NEH into previous reporting of LTM data by Battelle indicated that data were surrogate recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting, Alpha's process for reporting, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events.

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For samples where the surrogates are not recovered because of the dilution made for analysis of the sample, a DV Comment was added to the validated database file "K2" to indicate that the reported value was not surrogate recovery corrected. For samples with surrogates recovered, a separate excel worksheet has been constructed (Surrogate Recovery Correction \_ L09XXXX.xls) showing the lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. Non-detects are reported by Alpha at the Reporting Limit (RL) consistent with the QAPP. Since non-detects will not be comparable between Alpha and Battelle because the basis for the non-detects are different (MDL vs. RL), non-detects and reporting limits are not surrogate recovery corrected in the LTMV data.

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For this SDG, eight samples, 501725, 502125, 502225, 502425, 502625, 502725, 503125, 503225 reported surrogate recoveries. The surrogate corrected values, as shown in Surrogate Recovery Correction\_L0912897.pdf, replaced the Lab Result values in the validated database file, the data were qualified "K" to indicate this change to the Lab Result values, and a DV Comment was added, "K1", to indicate that the Reported result was recovery corrected. For samples 502425, 502625, 503125, and 503225, one of the surrogates was recovered outside criteria. For these four samples, the surrogate which was recovered within criteria was used exclusively for correction of the samples data, as indicated in the technical memo of January 29, 2010.

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The lab reported results for 18 NOAA Congeners + 2 surrogates. All samples were analyzed at DF>1 except for samples 502625 & 503125; therefore, all RLs for individual Congeners were above the PQLs requested in QAPP Table 1-3 for these diluted sample. The RLs for samples 502625 & 503125 were < RLs and PQLs requested in the QAPP; therefore, sensitivity was acceptable for these data.

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The narrative did not raise any issues affecting quality that were not already addressed.

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1 result was reported at a level < RL and was flagged "J" by the lab. This 1 result was accepted with Indeterminate bias due to uncertainty in quantitation at a level below the instrument calibration range

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*Qualifiers*: All data were reported with "D" qualifiers to indicate results reported from a dilution analysis. As instructed by Battelle, these "D" qualifiers were not removed

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Date: ~~3/30/10~~  
Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912897

Lab: Alpha Analytical

**ACTIONS:**

Preservation: Cooled to 4 ± 2°C. Sediments may be frozen for up to 1 year to preserve sample prior to extraction. If temperature outside criteria, use professional judgment.

HT: Extraction: waters -7d <HT< 14 d, J det/ J NDs; HT >14 d, J det/R ND

Extraction: sediment - 14d <HT< 28 d, J det/ J NDs; HT >28 d, J det/R ND (freezing arrests HT)

Analysis of extract: 40d < Extract HT < 60d, J det/ J NDs; Extract HT > 60d; J det/ R NDs

Surrogates: % Recovery > 130%, J det/Accept ND; 10% ≤ % Recovery < 50%, J det/J NDs; Recovery < 10%, J det/R NDs.

LCS/LCSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs. RPD > 30%, J det/UJ NDs.

MS/MSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs- Unspiked Sample only. RPD > 30%, J det/UJ NDs.

FD: RPD > 30% (waters) or 50% (sediment) for results > 2 x RL, J det/UJ NDs. Use professional judgment for values < 2 x RL.

MBs: If contamination in blank(s) exists, Blank Action Level (BAL)= 5 x Level in Blank (on a sample-equivalent basis). If a sample result is < RL and < BAL, negate (U) result at RL; if value > RL but < BAL, negate (U) result at level reported; if value > BAL, no Action.

RLs: Verify RLs are sample-specific and meet PQL given in QAPP Addendum 2009 UFP - Worksheet #15. If result > upper calibration range, J result; if

Other Data qualified J by lab stays as J; data qualified E by lab becomes J; data qualified U by lab stays U; data qualified P by lab becomes J; data qualified B becomes

Qualifiers: either U or J based on actions taken for Method Blank (MB)

% solids: 10% < % solids < 30%, J det/R ND; % solids < 10%, R detects and NDs.

**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated

**Reference:** Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, Massachusetts, September 2009 and Region I, EPA-NE Pesticide/PCB Data Validation Functional Guidelines - Part III, Draft February 2004

Laboratory Data were reported using BZ# only - the following table shows a cross reference of BZ# to Congener Name and CAS Number

| Congener Name                   | BZ #   | CAS Number |
|---------------------------------|--------|------------|
| 2,4'-Dichlorobiphenyl           | BZ#8   | 34883-43-7 |
| 2,2',5'-Trichlorobiphenyl       | BZ#18  | 37680-65-2 |
| 2,4,4'-Trichlorobiphenyl        | BZ#28  | 7012-37-5  |
| 2,2',3,5'-Tetrachlorobiphenyl   | BZ#44  | 41464-39-5 |
| 2,2',5,5'-Tetrachlorobiphenyl   | BZ#52  | 35693-99-3 |
| 2,3',4,4'-Tetrachlorobiphenyl   | BZ#66  | 32598-10-0 |
| 2,2',4,5,5'-Pentachlorobiphenyl | BZ#101 | 37680-73-2 |
| 2,3,3',4,4'-Pentachlorobiphenyl | BZ#105 | 32598-14-4 |
| 2,3',4,4',5-Pentachlorobiphenyl | BZ#118 | 31508-00-6 |

| Congener Name                            | BZ #   | CAS Number |
|--|--------|------------|
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | BZ#128 | 38380-07-3 |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | BZ#138 | 35065-28-2 |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | BZ#153 | 35065-27-1 |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | BZ#170 | 35065-30-6 |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | BZ#180 | 35065-29-3 |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | BZ#187 | 52663-68-0 |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | BZ#195 | 52663-78-2 |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | BZ#206 | 40186-72-9 |
| Decachlorobiphenyl                       | BZ#209 | 52663-77-1 |

Date: ~~3/30/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

Lab: Alpha Analytical

Date Sampled: 9/22/09 through 9/27/09

Analysis: Total Organic Carbon (TOC) by modified EPA SW-846 Method 9060

| QC Met Criteria? | Preservation<br>4 ± 2°C | HT<br>28 days | RL<br>0.01%<br>(100 mg/Kg) | MB<br>< RL | Solid LCS =<br>SRM<br>75-125% R | MS<br>75-125% R | MD<br>RPD ≤ 25% | FD<br>RPD ≤ 50% | % Solids<br>> 30% | Other                  |
|------------------|-------------------------|---------------|----------------------------|------------|---------------------------------|-----------------|-----------------|-----------------|-------------------|------------------------|
| Yes              | √                       | √             | √                          | √          | √                               | √               | √               | √               | √                 |                        |
| No               |                         |               |                            |            |                                 |                 |                 |                 |                   | Estimate (J)<br>503125 |

Calibration criteria: Unless otherwise noted in the laboratory narrative, it was assumed that all initial and continuing calibration verifications (ICV/CCV) and initial and continuing calibration blank (ICB/CCB) results were acceptable (met LTM V QAPP 2009 requirements). In addition, RPD < 25% for two replicates of each sample.

- Method Modification: Laboratory analyzed two replicates (burns) for TOC by Method 9060A rather than 4 (as in the method); this is consistent with LTMV QAPP requirements.

Samples were received intact. TOC analysis was performed on the samples "as-received" (i.e., not on "air-dried" sediments). Samples were frozen upon receipt to arrest holding time. Therefore, analyses, conducted on 10/26/09, were considered to have met HT criteria. No Action required.

MS/MD site sample used for QC: 501325. Duplicate burns of MS resulted in acceptable recovery and duplicate burns of sample/MD also gave RPD < 25%. Acceptable precision - no action required.

Sample/FD site sample IDs: 502125 & 508035. FD precision, based on average value for TOC for each sample, was RPD = 17.3%; therefore, FD precision was acceptable - No Action required.

Replicate (duplicate) precision TOC results of each sample all had RPD < 25% except 503125 (values reported for duplicate runs were 0.493% and 0.737% resulting in RPD = 39.7%) - all replicates acceptable except for 503125.

*\*ACTION: Replicate TOC results for sample 503125 estimated (J) with Indeterminate bias due to Replicate Imprecision.*

Data users should compute the arithmetic average of the two TOC replicate burns for each sample and use this average as the valid TOC result for that sample.

**Data Package Completeness:**

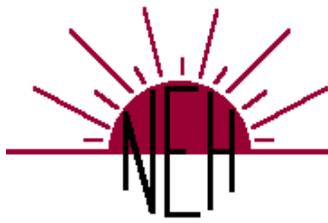
- Were all required forms (results, summary QC, COC), as required to validate the data in accordance with EPA Region 1 present in the data package? **Yes**
- Were all result forms for all samples listed on the chain-of-custody present in data package? **Yes**

If No, explain and request resubmittals:

Date: 9/17/10  
 Data Reviewer: \_\_\_\_\_

Nancy C. Rothman, Ph.D.





**Data Validation Report**  
**EPA Region I Tier I+**  
**18 NOAA PCB Congeners by 8270C and TOC by Method 9060**

**Client/Company:** Woods Hole Group, Inc. (WHG)

**Site/Project Name:** New Bedford Harbor Superfund Site – Long Term Monitoring (LTM) V

**Laboratory:** Alpha Analytical – Mansfield, MA

**Lab Project Number(s):** L0912897

**Date(s) of Collection:** September 22, 2009 through September 27, 2009

**Number / Type  
Samples & Analyses** 17 sediment samples for 18 NOAA PCB Congeners by EPA SW-846  
Method 8270C and Total Organic Carbon (TOC) by Method 9060

**Senior Data Reviewers:** Nancy C. Rothman, PhD, New Environmental Horizons, Inc.  
Susan D. Chapnick, New Environmental Horizons, Inc.

**Date Completed:** April 1, 2010  
**Revised:** *April 12, 2010*

*This report was revised to include the Tier I+ review of TOC data.*

This EPA Region I Tier I+ validation for 18 NOAA PCB Congeners and TOC was performed with the following intentions: 1) to determine if the data were generated and reported in accordance with the *Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, MA*, prepared by Woods Hole Group, Inc., September 2009 (LTMV QAPP); Region I, *EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses*, December 1996, including *Part III – Pesticide/PCB Data Validation Functional Guidelines*, Draft February 2004; 2) to determine if the data met project data quality objectives for acceptable accuracy, precision, sensitivity; and technical usability; and 3) to generate an electronic deliverable of validated results with project-specific data validation qualifiers added.

The Data Validation Report consists of three parts:

- This Data Validation Report letter summarizing the actions taken;
- The database file of validated sample results with validation qualifiers, bias, and comments added based on actions taken; and
- Data Validation Checklists for TOC and PCB Congeners including the Surrogate Recovery Correction worksheet completed during this validation to document the Tier I+ review. The Checklists are an integral part of the DV Report as they contain comprehensive details of all quality control (QC) reviewed, the acceptance criteria used, and the professional judgment and actions taken.

## I. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification analytical parameters reviewed and the sample type (e.g., field sample, field duplicate (FD), field equipment blank (EB), as applicable), are listed below in Table 1.

Table 1. Sample Descriptions and Analytical Parameters Validated

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type               |
|-----------|---------------|-----------------|----------|------------------------------------|---------------------------|
| 501725    | L0912897-01   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 501825    | L0912897-02   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 501925    | L0912897-03   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 502025    | L0912897-04   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 502125    | L0912897-05   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 508035    | L0912897-06   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Duplicate of 502125 |
| 502225    | L0912897-07   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 502325    | L0912897-08   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 502425    | L0912897-09   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 502525    | L0912897-10   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 502625    | L0912897-11   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |

Table 1. Sample Descriptions and Analytical Parameters Validated - continued

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type  |
|-----------|---------------|-----------------|----------|------------------------------------|--------------|
| 502725    | L0912897-12   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 501325    | L0912897-13   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 502925    | L0912897-14   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 503025    | L0912897-15   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 503125    | L0912897-16   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 503225    | L0912897-17   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |

Analytical method references:

18 NOAA Congeners: *Determination of PCB Homologs, Individual Congeners, and Pesticides by Gas Chromatography/Mass Spectrometry in the Select Ion Monitoring (SIM) Mode (EPA 680 & 8270C)*, Alpha SOP O-015, Rev. 2, June 19, 2006.

TOC: SW-846 Method 9060 modified, Alpha SOP W-028

<sup>1</sup> Grain Size analysis was also performed on these samples; however, data validation for this parameter was not required. TOC analysis was performed on “as-received” sediments while the 18 NOAA Congeners were performed using “air-dried” sediments.

## II. Data Validation Report Summary

This Data Validation Report represents a Tier I+ validation of the 18 NOAA PCB Congener and TOC sample results and summary QC (method and matrix), which were used to evaluate accuracy, precision, and sensitivity compared to the NBH LTMV QAPP requirements.

The following QC elements, as applicable to the analytical methods, were reviewed:

- Data package completeness and reporting protocols
- Sample receipt, holding times and preservation criteria
- Blank results including Method Blanks, Equipment Blanks, & Trip blanks
- Laboratory Control Sample (LCS) recoveries / LCS Duplicate Recoveries
- Standard Reference Material (SRM) Recoveries
- Surrogate Recoveries
- Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Recoveries
- MS/MSD, LCS/LCSD, sample/Laboratory Duplicate (LD), or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)

- Sample result reporting (including compound lists, reporting limits, and units)
- Calibration criteria\* (including tune criteria, initial calibration and continuing calibration verification)
- Internal Standard (IS) Recoveries\*
- Retention Time windows\*
- Other method-specific QC if applicable and reported\* (e.g., serial dilution results for metals)
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

\* This QC element is reviewed associated with the Tier II-type validation only. For Tier I+ validations this QC element is assumed to be acceptable unless otherwise noted in the laboratory narrative.

Based on this Tier I+ validation of the 18 NOAA PCB Congeners and TOC, all results were considered usable for project decisions based on a comparison to the NBH LTMV QAPP requirements and with the understanding of the potential uncertainty (bias) in the qualified results summarized in Table 2. NEH generated electronic validated results based on the project database file received from WHG for these data, by updating the following database fields for field samples and field QC only: VALID\_QUAL, VALIDATION\_LEVEL, VALIDATION, VALID\_DATE, BIAS, and DV\_COMMENT.

The remainder of this report documents “exceptions” to the NBH LTMV QAPP criteria or clarifications of data reported. QC elements not discussed below met all QAPP criteria. The full documentation of all QC elements reviewed during the Tier I+ validation are presented in the attached Data Validation Checklists.

### **Sample Receipt and Holding Time**

The sediment samples were received at the laboratory intact in seven shipments at 2.1°C to 4.1°C. Aliquots of the “as-received” samples were analyzed for TOC, Grain Size, and percent solids. Samples were frozen upon receipt to arrest holding time for TOC analysis. All samples had percent solids content of 33-81%; therefore, these sediment samples were air-dried, as required by the QAPP, prior to Congener analysis. After air-drying, the percent solids content for all samples was greater than 83%.

### **Accuracy**

The Method Blank reported detected results for seven of the 18 NOAA Congeners; however, a comparison of the levels reported in the method blank with the levels reported in the samples indicated that blank action to negate or qualify sample data was not required. The Method Blank was non-detect for TOC; therefore, blank action was not required.

There was no Equipment Blank required to be collected along with these sediment samples.

Surrogate recovery did not meet criteria for four samples: 502425, 502625, 503125, and 503225. One of the two surrogates was recovered low, but above 10%, in samples 502425, 502625, and 503125 and one of the two surrogates was recovered high compared to criteria in sample 503225. For these four

samples, the detected results were surrogate-recovery corrected, as required by the LTMV QAPP, using only the one surrogate in each sample that was recovered within criteria. As a consequence of performing this recovery correction calculation, the impact of the surrogates outside criteria on the sample data is uncertain; therefore, all results in these four samples were estimated (J and UJ) due to conflicting surrogate recovery results.

All 18 NOAA Congeners recovered within criteria in the LCS and LCSD except for 2,4,4'-Trichlorobiphenyl (BZ#28) and 2,2',5,5'-Tetrachlorobiphenyl (BZ#52), which recovered high in one or both of the LCS/LCSD. The results for 2,4,4'-Trichlorobiphenyl (BZ#28) and 2,2',5,5'-Tetrachlorobiphenyl (BZ#52) were estimated (J) with a possible high bias, unless other QC issues affected the results, in all seventeen sediments due to the high LCS and/or LCSD recoveries, as listed in Table 2.

Congener recoveries in the MS/MSD analysis conducted on sample 501325 could not be evaluated since the level of the spike was too low compared to the concentration of PCB Congeners in the field sample (i.e., the sample, MS and MSD were all analyzed at dilution factor (DF) = 100, at this high dilution, the relatively low matrix spike level could not be detected). Therefore, no action was taken based on the MS/MSD recoveries. TOC recovery in the MS analysis of sample 501325 was acceptable; indicating acceptable accuracy for TOC in the site matrix.

The Standard Reference Material (SRM NY/NJ Waterway Sediment) reported acceptable recovery for all Congeners certified in this SRM except 2,2',3,3',4,4'-Hexachlorobiphenyl (BZ#128), which was recovered slightly high compared to criteria. Since the LCS/LCSD recoveries for this Congener were within criteria, no action to qualify sample data was taken based on professional judgment. The TOC SRM reported acceptable recoveries for TOC certified in this SRM.

### **Precision**

LCS/LCSD precision was acceptable for all 18 NOAA Congeners except 2,4,4'-Trichlorobiphenyl (BZ#28). All 2,4,4'-Trichlorobiphenyl (BZ#28) data were estimated (J) due to LCS/LCSD imprecision, as shown in Table 2.

MS/MSD precision in the analysis of sample 501325 was acceptable for all 18 NOAA Congeners. Sample/MD precision for TOC analysis of 501325 was acceptable. These results indicate acceptable precision and representativeness of these sediments for analysis of the NOAA PCB Congeners and TOC.

All TOC analyses were performed in replicate (duplicate burns), as a method modification consistent with the site QAPP requirements. Precision between all replicates of TOC reported for each sample was acceptable for all samples except 503125. Replicate precision was not met for the duplicate burns of this one sample; therefore, the replicate values for TOC for 503125 were estimated (J) with indeterminate bias due to the observed imprecision.

Field Duplicate (FD) precision was acceptable for all 18 NOAA Congeners and TOC in the FD pair of 502125 and 508035. These results are an indication of acceptable precision and representativeness of these sediment samples to the site location for PCB Congeners and TOC.

## Sensitivity & Reporting

All samples met sensitivity requirements for PCB Congeners and TOC as indicated in NBH LTMV QAPP Table 1-3.

Data users should compute the average of the TOC replicate results (duplicate burns) for each sample and use this arithmetic average as the valid result for TOC.

An investigation by NEH into previous reporting of LTM data by Battelle indicated that Congener data were surrogate-recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate-recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting previous LTM data (LTMIV and prior monitoring data), Alpha's process for reporting LTMV results, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events reported by Battelle.

For Congener samples where the surrogates are not recovered because of analytical dilutions or when results were non-detect, the DV\_COMMENT "K2" was added to the validated database file to indicate that the reported value was not surrogate-recovery corrected.

For Congener samples where surrogate-recovery correction was performed, a separate Surrogate Recovery Correction excel worksheet was constructed (as part of the Data Validation Checklist process) showing the original lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. For surrogate-corrected results, the project database file was updated as follows:

1. The surrogate-corrected value, as shown in the Surrogate Recovery Correction worksheet, replaced the lab RESULT value in the validated database file;
2. The qualifier "K" was added to the VALID\_QUAL field to identify the result as surrogate-recovery corrected; and
3. "K1" was added to the DV\_COMMENT field as the DV code to further indicate that the reported result was surrogate-recovery corrected.

Non-detects for Congeners were reported by Alpha at the Reporting Limit (RL), consistent with the LTMV QAPP requirements. Since non-detected results are not comparable between Alpha and Battelle because the basis for the non-detects are different (RL vs. MDL), non-detects and reporting limits were not surrogate-recovery corrected in the LTMV data.

For this SDG, eight samples, 501725, 502125, 502225, 502725, 502425, 502625, 503125, and 503225 reported surrogate recoveries. For samples 502425, 502625, 503125, and 503225, one of the two surrogates were not recovered within criteria; therefore, the other surrogate, recovered within criteria, was used for correction of all detected Congener results. Surrogate-recovery correction was performed for these eight samples, as documented in *Surrogate Recovery Correction\_L0912897*. Actions taken are listed below in Table 2.

Results reported below the sample-specific RLs are considered uncertain because they are below the calibration range. During this review, data below the sample-specific RLs were qualified as estimated (J), as shown in Table 2, and as described in the Data Validation Checklist.

The laboratory reported all results from  $DF > 1$  analyses with a “D” qualifier. At Battelle’s request, these “D” qualifiers were maintained during the DV process.

Table 2. Summary of Data Validation Actions

| Field Sample ID  | Analyte   | Qualifier | Bias | Validation Comments   |
|--|---|-----------|------|---|
| 503125   | Total Organic Carbon  | J         | I    | Replicate imprecision   |
| 501325, 501825, 501925, 502025, 502325, 502525, 502925, 503025, & 508035 | 2,4,4'-Trichlorobiphenyl  | DJ        | I    | Reported value is not surrogate recovery corrected + High LCS recovery + LCS/LCSD imprecision |
| 501325, 501825, 501925, 502025, 502325, 502525, 502925, 503025, & 508035 | 2,2',5,5'-Tetrachlorobiphenyl   | DJ        | H    | Reported value is not surrogate recovery corrected + High LCS recovery                        |
| 501325, 501825, 501925, 502025, 502325, 502525, 502925, 503025, & 508035 | All Congeners except:<br>2,4,4'-Trichlorobiphenyl &<br>2,2',5,5'-Tetrachlorobiphenyl  | D / DU    |      | Reported value is not surrogate recovery corrected  |
| 501725, 502125, 502225, & 502725   | 2,4,4'-Trichlorobiphenyl  | DKJ       | I    | Reported value is surrogate recovery corrected + High LCS recovery + LCS/LCSD imprecision     |
| 501725, 502125, 502225, & 502725   | 2,2',5,5'-Tetrachlorobiphenyl   | DKJ       | H    | Reported value is surrogate recovery corrected + High LCS recovery                            |
| 501725, 502125, 502225, & 502725   | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue   | DU        |      | Reported value is not surrogate recovery corrected  |
| 501725, 502125, 502225, & 502725   | All 18 NOAA Congeners except:<br>2,4,4'-Trichlorobiphenyl,<br>2,2',5,5'-Tetrachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue | DK        |      | Reported value is surrogate recovery corrected  |

Table 2. Summary of Data Validation Actions - continued

| Field Sample ID                  | Analyte   | Qualifier | Bias | Validation Comments  |
|----------------------------------|---|-----------|------|--|
| 502425, 502625, 503125, & 503225 | 2,4,4'-Trichlorobiphenyl  | DKJ / KJ  | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery + High LCS recovery + LCS/LCSD imprecision     |
| 502425, 502625, 503125, & 503225 | 2,2',5,5'-Tetrachlorobiphenyl   | DKJ / KJ  | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery + High LCS recovery                            |
| 502425, 502625, 503125, & 503225 | 2,2',3,3',4,4',5,6-Octachlorobiphenyl   | DUJ / UJ  | I    | Reported value is not surrogate recovery corrected + Conflicting surrogate recovery  |
| 502425, 503125, & 503225         | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl & Decachlorobiphenyl - Homologue   | DUJ / UJ  | I    | Reported value is not surrogate recovery corrected + Conflicting surrogate recovery  |
| 502625                           | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl  | KJ        | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery  |
| 502625                           | Decachlorobiphenyl - Homologue  | KJ        | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery + Result uncertain below the calibration range |
| 502425, 502625, 503125, & 503225 | All 18 NOAA Congeners except:<br>2,4,4'-Trichlorobiphenyl,<br>2,2',5,5'-Tetrachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue | DKJ / KJ  | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery  |

*Qualifiers: U = Analyte is non-detect at or above the sample-specific reporting limit (RL); UJ = Non-detect is estimated at the RL; J = Result is estimated; EB = analyte detected in associated equipment blank; EMPC = estimated maximum possible concentration (PCB congeners only); R = Result is rejected and is unusable for project decisions; D = result reported from a dilution analysis (added by laboratory); K = Result is Surrogate Recovery Corrected.*

*Bias: L = Low; H = High; I = Indeterminate*

*Abbreviations used in Table 2:*

*LCS = Laboratory Control Sample*

*LCSD = Laboratory Control Sample Duplicate*

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE      | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|-----------------|--|-----|-------------------------------|------------|----------|-----------------------------|---------|
| 501725  |          | 5:34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 15.4       | D        | 30                          | UG/KG   |
| 501725  |          | 5:37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 93.9       | D        | 181                         | UG/KG   |
| 501725  |          | 5:7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 210        | D        | 404                         | UG/KG   |
| 501725  |          | 5:41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 87.1       | D        | 168                         | UG/KG   |
| 501725  |          | 5:35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 321        | D        | 617                         | UG/KG   |
| 501725  |          | 5:32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 35.6       | D        | 68                          | UG/KG   |
| 501725  |          | 5:37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 110        | D        | 212                         | UG/KG   |
| 501725  |          | 5:32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 12.2       | D        | 12                          | UG/KG   |
| 501725  |          | 5:31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 115        | D        | 113                         | UG/KG   |
| 501725  |          | 5:38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 3.44       | D        | 3.4                         | UG/KG   |
| 501725  |          | 5:35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 90.5       | D        | 89                          | UG/KG   |
| 501725  |          | 5:35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 72.5       | D        | 71                          | UG/KG   |
| 501725  |          | 5:35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 14.3       | D        | 14                          | UG/KG   |
| 501725  |          | 5:35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 15.5       | D        | 15                          | UG/KG   |
| 501725  |          | 5:52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 13.4       | D        | 13                          | UG/KG   |
| 501725  |          | 5:52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 1.67       | DU       | NA                          | UG/KG   |
| 501725  |          | 5:40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 1.67       | DU       | NA                          | UG/KG   |
| 501725  |          | 5:2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 1.67       | DU       | NA                          | UG/KG   |
| 501725  |          | 5:CS-10386-84-2 | Dbob   |     |                               | 52         | D        |                             | PCT_REC |
| 501725  |          | 5:CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 102        | D        |                             | PCT_REC |
| 502125  |          | 10:34883-43-7   | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 75.2       | D        | 90                          | UG/KG   |
| 502125  |          | 10:37680-65-2   | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 522        | D        | 621                         | UG/KG   |
| 502125  |          | 10:7012-37-5    | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1470       | D        | 1750                        | UG/KG   |
| 502125  |          | 10:41464-39-5   | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 549        | D        | 654                         | UG/KG   |
| 502125  |          | 10:35693-99-3   | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1460       | D        | 1738                        | UG/KG   |
| 502125  |          | 10:32598-10-0   | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 129        | D        | 154                         | UG/KG   |
| 502125  |          | 10:37680-73-2   | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 744        | D        | 886                         | UG/KG   |
| 502125  |          | 10:32598-14-4   | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 100        | D        | 116                         | UG/KG   |
| 502125  |          | 10:31508-00-6   | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 524        | D        | 609                         | UG/KG   |
| 502125  |          | 10:38380-07-3   | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 87.8       | D        | 102                         | UG/KG   |
| 502125  |          | 10:35065-28-2   | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 441        | D        | 513                         | UG/KG   |
| 502125  |          | 10:35065-27-1   | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 308        | D        | 358                         | UG/KG   |
| 502125  |          | 10:35065-30-6   | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 67.3       | D        | 78                          | UG/KG   |
| 502125  |          | 10:35065-29-3   | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 76.5       | D        | 89                          | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|---------|
| 502125  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 66         | D        | 77                          | UG/KG   |
| 502125  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.49       | DU       | NA                          | UG/KG   |
| 502125  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.49       | DU       | NA                          | UG/KG   |
| 502125  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 3.49       | DU       | NA                          | UG/KG   |
| 502125  | 10       | CS-10386-84-2 | Dbob   |     |                               | 84         | D        |                             | PCT_REC |
| 502125  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 86         | D        |                             | PCT_REC |
| 502225  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 62.7       | D        | 114                         | UG/KG   |
| 502225  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 384        | D        | 698                         | UG/KG   |
| 502225  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1180       | D        | 2145                        | UG/KG   |
| 502225  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 380        | D        | 691                         | UG/KG   |
| 502225  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1210       | D        | 2200                        | UG/KG   |
| 502225  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 109        | D        | 198                         | UG/KG   |
| 502225  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 536        | D        | 975                         | UG/KG   |
| 502225  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 45.5       | D        | 48.9                        | UG/KG   |
| 502225  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 409        | D        | 440                         | UG/KG   |
| 502225  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 73.1       | D        | 78.6                        | UG/KG   |
| 502225  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 347        | D        | 373                         | UG/KG   |
| 502225  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 358        | D        | 385                         | UG/KG   |
| 502225  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 47.2       | D        | 50.8                        | UG/KG   |
| 502225  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 57.9       | D        | 62.3                        | UG/KG   |
| 502225  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 57.2       | D        | 61.5                        | UG/KG   |
| 502225  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.32       | DU       | NA                          | UG/KG   |
| 502225  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.32       | DU       | NA                          | UG/KG   |
| 502225  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 3.32       | DU       | NA                          | UG/KG   |
| 502225  | 10       | CS-10386-84-2 | Dbob   |     |                               | 55         | D        |                             | PCT_REC |
| 502225  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 93         | D        |                             | PCT_REC |
| 502425  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | BZ198                         | 39.2       | D        | 57.6                        | UG/KG   |
| 502425  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | BZ198                         | 271        | D        | 399                         | UG/KG   |
| 502425  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | BZ198                         | 781        | D        | 1149                        | UG/KG   |
| 502425  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | BZ198                         | 272        | D        | 400                         | UG/KG   |
| 502425  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | BZ198                         | 814        | D        | 1197                        | UG/KG   |
| 502425  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | BZ198                         | 77.2       | D        | 114                         | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|---------|
| 502425  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | BZ198                         | 381        | D        | 560                         | UG/KG   |
| 502425  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 42.3       | D        | 62.2                        | UG/KG   |
| 502425  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 265        | D        | 390                         | UG/KG   |
| 502425  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 45.8       | D        | 67.4                        | UG/KG   |
| 502425  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 212        | D        | 312                         | UG/KG   |
| 502425  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 159        | D        | 234                         | UG/KG   |
| 502425  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 30         | D        | 44.1                        | UG/KG   |
| 502425  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 31.7       | D        | 46.6                        | UG/KG   |
| 502425  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 31.2       | D        | 45.9                        | UG/KG   |
| 502425  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.6        | DU       | NA                          | UG/KG   |
| 502425  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.6        | DU       | NA                          | UG/KG   |
| 502425  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 3.6        | DU       | NA                          | UG/KG   |
| 502425  | 10       | CS-10386-84-2 | Dbob   |     |                               | 34         | D        |                             | PCT_REC |
| 502425  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 68         | D        |                             | PCT_REC |
| 502625  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | BZ198                         | 6.3        |          | 6.2                         | UG/KG   |
| 502625  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | BZ198                         | 58.6       |          | 57                          | UG/KG   |
| 502625  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | BZ198                         | 94.5       |          | 93                          | UG/KG   |
| 502625  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | BZ198                         | 53.6       |          | 53                          | UG/KG   |
| 502625  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | BZ198                         | 154        |          | 151                         | UG/KG   |
| 502625  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | BZ198                         | 18         |          | 18                          | UG/KG   |
| 502625  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | BZ198                         | 56.2       |          | 55                          | UG/KG   |
| 502625  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 6.78       |          | 6.6                         | UG/KG   |
| 502625  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 51.5       |          | 50                          | UG/KG   |
| 502625  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 8.48       |          | 8.3                         | UG/KG   |
| 502625  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 43.7       |          | 43                          | UG/KG   |
| 502625  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 32.6       |          | 32                          | UG/KG   |
| 502625  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 4.11       |          | 4.0                         | UG/KG   |
| 502625  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 5.02       |          | 4.9                         | UG/KG   |
| 502625  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 4.97       |          | 4.9                         | UG/KG   |
| 502625  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.328      | U        | NA                          | UG/KG   |
| 502625  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.854      |          | 0.837                       | UG/KG   |
| 502625  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.269      | J        | 0.264                       | UG/KG   |
| 502625  | 1        | CS-10386-84-2 | Dbob   |     |                               | 49         |          |                             | PCT_REC |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|---------|
| 502625  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 102        |          |                             | PCT_REC |
| 502725  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 53.4       | D        | 103                         | UG/KG   |
| 502725  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 334        | D        | 642                         | UG/KG   |
| 502725  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 923        | D        | 1775                        | UG/KG   |
| 502725  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 259        | D        | 498                         | UG/KG   |
| 502725  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 887        | D        | 1706                        | UG/KG   |
| 502725  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 77.1       | D        | 148                         | UG/KG   |
| 502725  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 406        | D        | 781                         | UG/KG   |
| 502725  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 32.6       | D        | 25.7                        | UG/KG   |
| 502725  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 279        | D        | 220                         | UG/KG   |
| 502725  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 49         | D        | 38.6                        | UG/KG   |
| 502725  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 231        | D        | 182                         | UG/KG   |
| 502725  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 269        | D        | 212                         | UG/KG   |
| 502725  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 34.5       | D        | 27.2                        | UG/KG   |
| 502725  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 37.6       | D        | 29.6                        | UG/KG   |
| 502725  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 37.7       | D        | 29.7                        | UG/KG   |
| 502725  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.41       | DU       | NA                          | UG/KG   |
| 502725  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.41       | DU       | NA                          | UG/KG   |
| 502725  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 3.41       | DU       | NA                          | UG/KG   |
| 502725  | 10       | CS-10386-84-2 | Dbob   |     |                               | 52         | D        |                             | PCT_REC |
| 502725  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 127        | D        |                             | PCT_REC |
| 503125  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | BZ198                         | 6.77       |          | 10.0                        | UG/KG   |
| 503125  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | BZ198                         | 35.9       |          | 53                          | UG/KG   |
| 503125  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | BZ198                         | 139        |          | 204                         | UG/KG   |
| 503125  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | BZ198                         | 40.7       |          | 60                          | UG/KG   |
| 503125  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | BZ198                         | 133        |          | 196                         | UG/KG   |
| 503125  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | BZ198                         | 15.6       |          | 23                          | UG/KG   |
| 503125  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | BZ198                         | 86.6       |          | 127                         | UG/KG   |
| 503125  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 13.1       |          | 19.3                        | UG/KG   |
| 503125  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 68.1       |          | 100                         | UG/KG   |
| 503125  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 12.4       |          | 18.2                        | UG/KG   |
| 503125  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 57.6       |          | 85                          | UG/KG   |
| 503125  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 43.1       |          | 63                          | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|---------|
| 503125  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 8.27       |          | 12.2                        | UG/KG   |
| 503125  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 8.87       |          | 13.0                        | UG/KG   |
| 503125  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 8.04       |          | 11.8                        | UG/KG   |
| 503125  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.332      | U        | NA                          | UG/KG   |
| 503125  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.332      | U        | NA                          | UG/KG   |
| 503125  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.332      | U        | NA                          | UG/KG   |
| 503125  | 1        | CS-10386-84-2 | Dbob   |     |                               | 43         |          |                             | PCT_REC |
| 503125  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 68         |          |                             | PCT_REC |
| 503225  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 55.5       | D        | 97                          | UG/KG   |
| 503225  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 404        | D        | 709                         | UG/KG   |
| 503225  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1380       | D        | 2421                        | UG/KG   |
| 503225  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 498        | D        | 874                         | UG/KG   |
| 503225  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1220       | D        | 2140                        | UG/KG   |
| 503225  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 190        | D        | 333                         | UG/KG   |
| 503225  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 960        | D        | 1684                        | UG/KG   |
| 503225  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 166        | D        | 291                         | UG/KG   |
| 503225  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 763        | D        | 1339                        | UG/KG   |
| 503225  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 136        | D        | 239                         | UG/KG   |
| 503225  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 600        | D        | 1053                        | UG/KG   |
| 503225  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 377        | D        | 661                         | UG/KG   |
| 503225  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 80.8       | D        | 142                         | UG/KG   |
| 503225  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 86.8       | D        | 152                         | UG/KG   |
| 503225  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 73.8       | D        | 129                         | UG/KG   |
| 503225  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 3.49       | DU       | NA                          | UG/KG   |
| 503225  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 3.49       | DU       | NA                          | UG/KG   |
| 503225  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 3.49       | DU       | NA                          | UG/KG   |
| 503225  | 10       | CS-10386-84-2 | Dbob   |     |                               | 57         | D        |                             | PCT_REC |
| 503225  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 175        | D        |                             | PCT_REC |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912899

Lab: Alpha Analytical

Date Sampled: 9/22/09 through 9/27/09

Analysis: 18 NOAA PCB Congeners by GC/MS-SIM

No. Samples

16 + 1FD

Matrix:

Sediments

| Data Element | Preservation & HT | Surrogates %R 50-130%  | LCS/LCSD                          | MS/MSD               | FD                         | MB                           | RL                          | Issues with Qualifiers?                                       | Other  |
|--------------|-------------------|--|-----------------------------------|----------------------|----------------------------|------------------------------|-----------------------------|---|--|
|              |                   |  | SRM %R 40-140% RPD ≤ 30%          | %R 40-140% RPD ≤ 30% | RPD ≤ 30% SW RPD ≤ 50% SED | < RL or < 5x Conc. in sample | meets QAPP req. for matrix? |   |  |
| Yes          | √                 |  |                                   | √                    | √                          |                              |                             |   |  |
| No           |                   | Estimate (J) all detects in 503525, 503925, 504425, 504625, & 504825 | Estimate (J) BZ105 in all samples |                      |                            | See page 2                   | Estimate (J) 4 results < RL | Data qualified "D" by the lab for all samples analyzed DF > 1 | Surrogate recovery correct all samples - see "Surrogate Recovery Correction _L0912899.pdf" and page 4 of this report for details |

**Did the Laboratory Narrative contain any issues which may affect data quality? Yes; however, all issues were reported in the summary data.**

**Were the %solids acceptable (>30%)? Yes all > 70% solids after air-drying. Prior to air-drying, % solids were 34-80%.**

*The data package consisted of a laboratory narrative, data sheets for samples, Method Blanks (MB), laboratory control samples (LCS), Matrix Spike/Matrix Spike Duplicates (MS/MSD), and the executed chain-of-custody. Summary information for initial and continuing calibrations were not present nor were raw data for samples and quality control (QC) reported. This Tier I+ review assumed that initial calibrations and qualitative and quantitative determination of the 18 NOAA Congeners were acceptable unless an issue was raised in the laboratory narrative.*

**Comments:**

Samples were received intact at 2.0C to 3.5C in 6 shipments on the day of or day after sample collection (e.g., samples collected on 9/27 were received on 9/28/09). COC seals were absent from coolers; however, these were picked up from the site by a courier and delivered directly to the lab.

Samples were analyzed for % solids, TOC, and Grain size. All samples were also air-dried and subsequently analyzed for %solids - air-dried and 18 NOAA Congeners

*HT: Air-dried samples were extracted on 10/6/09 and analyzed by 10/27/09 - HT met - No action required.*

*Surrogates: both surrogates (DBOB and BZ198) were recovered within criteria in all samples except BZ198 recovered high (>130%) in samples 503525, 503925, 504425, 504625, and 504825. Since these samples were recovery corrected using the other surrogate (DBOB), it is unclear how these high BZ198 surrogate recoveries would have affected detected results. Since non-detects are not surrogate recovery corrected and since high recovery should not have affected the non-detects, only detected results in these five samples affected.*

*\*ACTION: All detected results estimated (J) in samples 503525, 503925, 504425, 504625, and 504825 due to conflicting Surrogate recoveries.*

*LCS: %Rec for LCS and LCSD were all within 40-140% for all 18 NOAA Congeners spiked and RPDs between LCS and LCSD all OK except BZ52 LCS recovery high (147%) - LCSD & RPD OK; and BZ105 RPD high (51%) but LCS & LCSD OK. No Action taken for high LCS BZ52 since LCSD OK and RPD OK.*

*\*ACTION: BZ105 estimated (J) in all 17 sediment samples due to LCS/LCSD imprecision.*

Date: ~~4/5/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912899

Lab: Alpha Analytical

Blank Action:                      Blanks Reviewed: Method Blank  
No EB associated with samples

| Blank ID     | Contaminant / Level | Matrix Related? | Action Level / Action | Sample and Reported Result  | Corrected Result |
|--------------|---------------------|-----------------|-----------------------|---|------------------|
| Method Blank | BZ#18 0.603 µg/Kg   | Y               | 3.015 µg/Kg           | All samples were >>> BAL - No Action required   |                  |
| Method Blank | BZ#28 0.863 µg/Kg   | Y               | 4.315 µg/Kg           | All samples were >>> BAL or ND - No Action required                                       |                  |
| Method Blank | BZ#44 0.443 µg/Kg   | Y               | 2.215 µg/Kg           | 507825                      1.02 B<br>All other samples were >>> BAL - No Action required | 1.02 U           |
| Method Blank | BZ#52 0.860 µg/Kg   | Y               | 4.3 µg/Kg             | 507825                      2.51 B<br>All other samples were >>> BAL - No Action required | 2.51 U           |
| Method Blank | BZ#101 0.373 µg/Kg  | Y               | 1.865 µg/Kg           | 507825                      1.81 B<br>All other samples were >>> BAL - No Action required | 1.81 U           |

Comments:  
SRM: NY/NJ Waterway Sediment. %Rec for Congeners in SRM were all within 40-140% except BZ#66 (37%), BZ#128 (157%), BZ195 (234%), BZ206 (181%) . Since the LCS/LCSD recovery was acceptable for these Congeners, no action taken to qualify samples data based on these SRM results.

MS/MSD: performed on sample 507825. Sample, MS and MSD were analyzed at DF=1. All MS & MSD %Rec OK and RPD between MS and MSD acceptable - acceptable accuracy and precision for sample matrix by method of analysis demonstrated - No Action required.

Date: ~~4/5/10~~  
Data Reviewer: Nancy C. Rothman, Ph.D.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912899

Lab: Alpha Analytical

Comments:

*FD pair:* 503325 & 508135 - a comparison of results shown below

Field Duplicate Evaluation\_ Sample IDs:

Sample = 503325

FD = 508135

| Analyte Name                             | DF= 10*    | Sample<br>µg/Kg | Sample Result<br>Q Level | FD    | FD Result<br>Q Level | RPD  | Action |
|--|------------|-----------------|--------------------------|-------|----------------------|------|--------|
|  | RL (µg/Kg) |                 |                          | µg/Kg |                      |      |        |
| 2,4'-Dichlorobiphenyl                    | 4.07       | 179             | > 2 x RL                 | 117   | > 2 x RL             | 41.9 | None   |
| 2,2',5-Trichlorobiphenyl                 | 4.07       | 1026            | > 2 x RL                 | 674   | > 2 x RL             | 41.4 | None   |
| 2,4,4'-Trichlorobiphenyl                 | 4.07       | 3172            | > 2 x RL                 | 2493  | > 2 x RL             | 24.0 | None   |
| 2,2',3,5'-Tetrachlorobiphenyl            | 4.07       | 1438            | > 2 x RL                 | 921   | > 2 x RL             | 43.8 | None   |
| 2,2',5,5'-Tetrachlorobiphenyl            | 4.07       | 3414            | > 2 x RL                 | 2192  | > 2 x RL             | 43.6 | None   |
| 2,3',4,4'-Tetrachlorobiphenyl            | 4.07       | 547             | > 2 x RL                 | 351   | > 2 x RL             | 43.7 | None   |
| 2,2',4,5,5'-Pentachlorobiphenyl          | 4.07       | 2724            | > 2 x RL                 | 1712  | > 2 x RL             | 45.6 | None   |
| 2,3,3',4,4'-Pentachlorobiphenyl          | 4.07       | 305             | > 2 x RL                 | 233   | > 2 x RL             | 26.8 | None   |
| 2,3',4,4',5-Pentachlorobiphenyl          | 4.07       | 1266            | > 2 x RL                 | 965   | > 2 x RL             | 27.0 | None   |
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | 4.07       | 234             | > 2 x RL                 | 177   | > 2 x RL             | 27.7 | None   |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | 4.07       | 1055            | > 2 x RL                 | 796   | > 2 x RL             | 28.0 | None   |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | 4.07       | 639             | > 2 x RL                 | 610   | > 2 x RL             | 4.6  | None   |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | 4.07       | 129             | > 2 x RL                 | 105   | > 2 x RL             | 20.5 | None   |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | 4.07       | 142             | > 2 x RL                 | 106   | > 2 x RL             | 29.0 | None   |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | 4.07       | 111             | > 2 x RL                 | 82    | > 2 x RL             | 30.1 | None   |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | 4.07       | 4.07            | U RL                     | 4.11  | U RL                 | NA   | None   |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | 4.07       | 4.07            | U RL                     | 8.61  | > 2 x RL             | NA   | None   |
| Decachlorobiphenyl                       | 4.07       | 3.9             | < RL                     | 2.49  | J < RL               | 44.1 | None   |

\* The sample and FD were both analyzed at DF=10

FD precision was acceptable for all 18 NOAA Congeners. Note, both samples underwent surrogate recovery correction. No Action required.

Date: ~~4/5/10~~  
Data Reviewer: Nancy C. Rothman, Ph.D.

**New Bedford Harbor**  
**18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912899

Lab: Alpha Analytical

Comments:

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An investigation by NEH into previous reporting of LTM data by Battelle indicated that data were surrogate recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting, Alpha's process for reporting, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events.

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For samples where the surrogates are not recovered because of the dilution made for analysis of the sample, a DV Comment was added to the validated database file "K2" to indicate that the reported value was not surrogate recovery corrected. For samples with surrogates recovered, a separate excel worksheet has been constructed (Surrogate Recovery Correction \_ L09XXXX.xls) showing the lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. Non-detects are reported by Alpha at the Reporting Limit (RL) consistent with the QAPP. Since non-detects will not be comparable between Alpha and Battelle because the basis for the non-detects are different (MDL vs. RL), non-detects and reporting limits are not surrogate recovery corrected in the LTMV data.

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All samples in this SDG reported surrogate recoveries. The surrogate corrected values, as shown in Surrogate Recovery Correction\_L0912899.pdf, replaced the Lab Result values in the validated database file, the data were qualified "K" to indicate this change to the Lab Result values, and a DV Comment was added, "K1", to indicate that the Reported result was recovery corrected. For samples 503525, 503925, 504425, 504625, and 504825, one of the surrogates was recovered outside criteria. For these five samples, the surrogate which was recovered within criteria was used exclusively for correction of the samples data, as indicated in the technical memo of January 29, 2010.

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The lab reported results for 18 NOAA Congeners + 2 surrogates. All samples analyzed at DF=1 reported RLs for individual Congeners and PQLs below those requested in the QAPP; therefore, sensitivity was acceptable for these data. Samples with DF > 1 also met sensitivity requirements since the DF >1 was performed to ensure that all detects were reported within the instrument calibration range.

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The narrative did not raise any issues affecting quality that were not already addressed.

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4 results were reported at levels < RL and was flagged "J" by the lab. These 4 results were accepted with Indeterminate bias due to uncertainty in quantitation at a level below the instrument calibration range

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*Qualifiers*: All data were reported with "D" qualifiers to indicate results reported from a dilution analysis. As instructed by Battelle, these "D" qualifiers were not removed

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Date: ~~4/5/10~~  
Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912899

Lab: Alpha Analytical

**ACTIONS:**

Preservation: Cooled to 4 ± 2°C. Sediments may be frozen for up to 1 year to preserve sample prior to extraction. If temperature outside criteria, use professional judgment.

HT: Extraction: waters -7d <HT< 14 d, J det/ J NDs; HT >14 d, J det/R ND

Extraction: sediment - 14d <HT< 28 d, J det/ J NDs; HT >28 d, J det/R ND (freezing arrests HT)

Analysis of extract: 40d < Extract HT < 60d, J det/ J NDs; Extract HT > 60d; J det/ R NDs

Surrogates: % Recovery > 130%, J det/Accept ND; 10% ≤ % Recovery < 50%, J det/J NDs; Recovery < 10%, J det/R NDs.

LCS/LCSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs. RPD > 30%, J det/UJ NDs.

MS/MSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs- Unspiked Sample only. RPD > 30%, J det/UJ NDs.

FD: RPD > 30% (waters) or 50% (sediment) for results > 2 x RL, J det/UJ NDs. Use professional judgment for values < 2 x RL.

MBs: If contamination in blank(s) exists, Blank Action Level (BAL)= 5 x Level in Blank (on a sample-equivalent basis). If a sample result is < RL and < BAL , negate (U) result at RL; if value > RL but < BAL, negate (U) result at level reported; if value > BAL, no Action.

RLs: Verify RLs are sample-specific and meet PQL given in QAPP Addendum 2009 UFP - Worksheet #15. If result > upper calibration range, J result; if

Other Data qualified J by lab stays as J; data qualified E by lab becomes J; data qualified U by lab stays U; data qualified P by lab becomes J; data qualified B becomes

Qualifiers: either U or J based on actions taken for Method Blank (MB)

% solids: 10% < % solids < 30%, J det/R ND; % solids < 10%, R detects and NDs.

**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated

**Reference:** Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, Massachusetts, September 2009 and Region I, EPA-NE Pesticide/PCB Data Validation Functional Guidelines - Part III, Draft February 2004

Laboratory Data were reported using BZ# only - the following table shows a cross reference of BZ# to Congener Name and CAS Number

| Congener Name                   | BZ #   | CAS Number |
|---------------------------------|--------|------------|
| 2,4'-Dichlorobiphenyl           | BZ#8   | 34883-43-7 |
| 2,2',5'-Trichlorobiphenyl       | BZ#18  | 37680-65-2 |
| 2,4,4'-Trichlorobiphenyl        | BZ#28  | 7012-37-5  |
| 2,2',3,5'-Tetrachlorobiphenyl   | BZ#44  | 41464-39-5 |
| 2,2',5,5'-Tetrachlorobiphenyl   | BZ#52  | 35693-99-3 |
| 2,3',4,4'-Tetrachlorobiphenyl   | BZ#66  | 32598-10-0 |
| 2,2',4,5,5'-Pentachlorobiphenyl | BZ#101 | 37680-73-2 |
| 2,3,3',4,4'-Pentachlorobiphenyl | BZ#105 | 32598-14-4 |
| 2,3',4,4',5-Pentachlorobiphenyl | BZ#118 | 31508-00-6 |

| Congener Name                            | BZ #   | CAS Number |
|--|--------|------------|
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | BZ#128 | 38380-07-3 |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | BZ#138 | 35065-28-2 |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | BZ#153 | 35065-27-1 |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | BZ#170 | 35065-30-6 |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | BZ#180 | 35065-29-3 |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | BZ#187 | 52663-68-0 |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | BZ#195 | 52663-78-2 |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | BZ#206 | 40186-72-9 |
| Decachlorobiphenyl                       | BZ#209 | 52663-77-1 |

Date: ~~4/5/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
LTM V 2009**

Lab Project: L0912899

Lab: Alpha Analytical

**TOC Tier I+ Data Validation Checklist**

No. Samples: 16 + 1FD  
Matrix: Sediment

Date Sampled: 9/22/09 through 9/27/09

Analysis: Total Organic Carbon (TOC) by modified EPA SW-846 Method 9060

| QC Met Criteria? | Preservation<br>4 ± 2°C | HT<br>28 days | RL<br>0.01%<br>(100 mg/Kg) | MB<br>< RL | Solid LCS =<br>SRM<br>75-125% R | MS<br>75-125% R | MD<br>RPD ≤ 25% | FD<br>RPD ≤ 50% | % Solids<br>> 30% | Other |
|------------------|-------------------------|---------------|----------------------------|------------|---------------------------------|-----------------|-----------------|-----------------|-------------------|-------|
| <b>Yes</b>       | √                       | √             | √                          | √          | √                               | √               | √               | √               | √                 |       |
| <b>No</b>        |                         |               |                            |            |                                 |                 |                 |                 |                   |       |

Calibration criteria: Unless otherwise noted in the laboratory narrative, it was assumed that all initial and continuing calibration verifications (ICV/CCV) and initial and continuing calibration blank (ICB/CCB) results were acceptable (met LTM V QAPP 2009 requirements). In addition, RPD < 25% for two replicates of each sample.

- Method Modification: Laboratory analyzed two replicates (burns) for TOC by Method 9060A rather than 4 (as in the method); this is consistent with LTMV QAPP requirements.

Samples were received intact. TOC analysis was performed on the samples "as-received" (i.e., not on "air-dried" sediments). Samples were frozen upon receipt to arrest holding time. Therefore, analyses, conducted on 10/28/09, were considered to have met HT criteria. No Action required.

MS/MD site sample used for QC: 507825. Duplicate burns of MS resulted in acceptable recovery and duplicate burns of sample/MD also gave RPD < 25%. Acceptable precision - No action required.

Sample/FD site sample IDs: 503325 & 508135. FD precision, based on average value for TOC for each sample, was RPD = 10.5%; therefore, FD precision was acceptable - No Action required.

Replicate (duplicate) precision TOC results of each sample all had RPD < 25% - No Action required.

Data users should compute the arithmetic average of the two TOC replicate burns for each sample and use this average as the valid TOC result for that sample.

**Data Package Completeness:**

- Were all required forms (results, summary QC, COC), as required to validate the data in accordance with EPA Region 1 present in the data package? **Yes**
- Were all result forms for all samples listed on the chain-of-custody present in data package? **Yes**

If No, explain and request resubmittals:

Date: 7/17/10  
Data Reviewer: \_\_\_\_\_

Nancy C. Rothman, Ph.D.

## TOC Tier I+ Data Validation Checklist

Lab: Alpha Analytical**Data Quality / Usability Issues:**1. Did the Laboratory Narrative contain any issues which may affect data quality or usability that have not been already addressed on page 1? **No.**

If Yes, explain.

2. Explain further any actions taken based on summary QC, as necessary, below.

No further actions required.

**All TOC data were accepted as reported by the laboratory and unchanged as a consequence of this data validation review.****QC Actions:**

Pres./HT: HT exceedance: J detects; Non-detects: R or UJ based on professional judgment. Freezing arrests HT.

Temperature: outside control limits of  $4 \pm 2^\circ\text{C}$ : use professional judgment.

Blanks: Method Blanks and instrument blanks: TOC &lt; RL unless all sample results are &gt; 10 blank level. Detected results &lt; matrix-matched blank level report as "U" (non-detected at level found). Professional judgment used for non-matrix matched blanks (e.g. aqueous blank associated with sediment samples).

Calibration Criteria: Assume acceptable unless narrated. Exceedances of any calibration criteria will affect accuracy of the data: J detects and UJ non-detects. Severe exceedances of calibration criteria, to be determined based on professional judgment, may require rejection, R, of data.

Assume acceptable unless narrated. If narrated as exceeded: %Recoveries &lt; lower control limit: J / UJ. %Recoveries &gt; upper control limit: J detects.

ICV/CCV: If severe exceedance &lt;50% recovery: R non-detects.

LCS/SRM: %Recoveries &lt; lower control limit: J / UJ. %Recoveries &gt; upper control limit: J detects. %Recoveries &lt; 50%, may R non-detects &amp; J detects but use professional judgment to accept results if MS is in-control indicating acceptable accuracy in sample matrix.

MS: %Recoveries &lt; lower control limit: J / UJ. %Recoveries &gt; upper control limit: J detects. %Recoveries &lt; 30%, may R non-detects &amp; J detects but use professional judgment if sample concentration &gt; 2x spike level.

MD: Results &gt; 5xRL: RPD &gt;25%: J / UJ associated results in batch - to be determined using professional judgment.

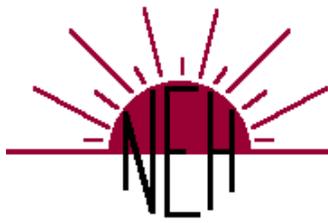
Results < 5xRL: difference >  $\pm 2xRL$ , J / UJ associated results in batch - to be determined using professional judgment.FD: Results > 5xRL: RPD >50%: J / UJ FD results only. Results < 5xRL: difference >  $\pm 4xRL$ , J/UJ FD results only.

% Solids: 10% &lt; % solids &lt; 30%, J detects/R non-detects; % solids &lt; 10%, R all results.

**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value; R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate. QC Limits based on EPA Region 1 Inorganic DV guidance and LTM V QAPP 2009.**References:** Quality Assurance Project Plan; New Bedford Harbor Long Term Monitoring V; New Bedford, Massachusetts (September 2009); Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996; USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review; Publication EPA 540-R-04-004, October 2004.Date: 7/17/10

Data Reviewer: \_\_\_\_\_

Nancy C. Rothman, Ph.D.



**Data Validation Report**  
**EPA Region I Tier I+**  
**18 NOAA PCB Congeners by 8270C and TOC by Method 9060**

**Client/Company:** Woods Hole Group, Inc. (WHG)

**Site/Project Name:** New Bedford Harbor Superfund Site – Long Term Monitoring (LTM) V

**Laboratory:** Alpha Analytical – Mansfield, MA

**Lab Project Number(s):** L0912899

**Date(s) of Collection:** September 22, 2009 through September 27, 2009

**Number / Type  
Samples & Analyses** 17 sediment samples for 18 NOAA PCB Congeners by EPA SW-846  
Method 8270C and Total Organic Carbon (TOC) by Method 9060

**Senior Data Reviewers:** Nancy C. Rothman, PhD, New Environmental Horizons, Inc.  
Susan D. Chapnick, New Environmental Horizons, Inc.

**Date Completed:** April 5, 2010  
**Revised:** *April 12, 2010*

*This report was revised to include the Tier I+ review of TOC data.*

This EPA Region I Tier I+ validation for 18 NOAA PCB Congeners and TOC was performed with the following intentions: 1) to determine if the data were generated and reported in accordance with the *Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, MA*, prepared by Woods Hole Group, Inc., September 2009 (LTMV QAPP); Region I, *EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses*, December 1996, including *Part III – Pesticide/PCB Data Validation Functional Guidelines*, Draft February 2004; 2) to determine if the data met project data quality objectives for acceptable accuracy, precision, sensitivity; and technical usability; and 3) to generate an electronic deliverable of validated results with project-specific data validation qualifiers added.

The Data Validation Report consists of three parts:

- This Data Validation Report letter summarizing the actions taken;
- The database file of validated sample results with validation qualifiers, bias, and comments added based on actions taken; and
- Data Validation Checklists for TOC and PCB Congeners including the Surrogate Recovery Correction worksheet completed during this validation to document the Tier I+ review. The Checklists are an integral part of the DV Report as they contain comprehensive details of all quality control (QC) reviewed, the acceptance criteria used, and the professional judgment and actions taken.

## I. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification analytical parameters reviewed and the sample type (e.g., field sample, field duplicate (FD), field equipment blank (EB), as applicable), are listed below in Table 1.

Table 1. Sample Descriptions and Analytical Parameters Validated

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type               |
|-----------|---------------|-----------------|----------|------------------------------------|---------------------------|
| 503325    | L0912899-01   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 508135    | L0912899-02   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Duplicate of 503325 |
| 503425    | L0912899-03   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 503525    | L0912899-04   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 503625    | L0912899-05   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 503725    | L0912899-06   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 503825    | L0912899-07   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 503925    | L0912899-08   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 504025    | L0912899-09   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 504125    | L0912899-10   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 504225    | L0912899-11   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |

Table 1. Sample Descriptions and Analytical Parameters Validated - *continued*

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type  |
|-----------|---------------|-----------------|----------|------------------------------------|--------------|
| 504325    | L0912899-12   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 504425    | L0912899-13   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507825    | L0912899-14   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 504625    | L0912899-15   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 504725    | L0912899-16   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 504825    | L0912899-17   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |

Analytical method references:

18 NOAA Congeners: *Determination of PCB Homologs, Individual Congeners, and Pesticides by Gas Chromatography/Mass Spectrometry in the Select Ion Monitoring (SIM) Mode (EPA 680 & 8270C)*, Alpha SOP O-015, Rev. 2, June 19, 2006.

TOC: SW-846 Method 9060 modified, Alpha SOP W-028

<sup>1</sup> Grain Size analysis was also performed on these samples; however, data validation for this parameter was not required. TOC analysis was performed on “as-received” sediments while the 18 NOAA Congeners were performed using “air-dried” sediments.

## II. Data Validation Report Summary

This Data Validation Report represents a Tier I+ validation of the 18 NOAA PCB Congener and TOC sample results and summary QC (method and matrix), which were used to evaluate accuracy, precision, and sensitivity compared to the NBH LTMV QAPP requirements.

The following QC elements, as applicable to the analytical methods, were reviewed:

- Data package completeness and reporting protocols
- Sample receipt, holding times and preservation criteria
- Blank results including Method Blanks, Equipment Blanks, & Trip blanks
- Laboratory Control Sample (LCS) recoveries / LCS Duplicate Recoveries
- Standard Reference Material (SRM) Recoveries
- Surrogate Recoveries
- Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Recoveries
- MS/MSD, LCS/LCSD, sample/Laboratory Duplicate (LD), or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)

- Sample result reporting (including compound lists, reporting limits, and units)
- Calibration criteria\* (including tune criteria, initial calibration and continuing calibration verification)
- Internal Standard (IS) Recoveries\*
- Retention Time windows\*
- Other method-specific QC if applicable and reported\* (e.g., serial dilution results for metals)
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

\* This QC element is reviewed associated with the Tier II-type validation only. For Tier I+ validations this QC element is assumed to be acceptable unless otherwise noted in the laboratory narrative.

Based on this Tier I+ validation of the 18 NOAA PCB Congeners and TOC, all results were considered usable for project decisions based on a comparison to the NBH LTMV QAPP requirements and with the understanding of the potential uncertainty (bias) in the qualified results summarized in Table 2. NEH generated electronic validated results based on the project database file received from WHG for these data, by updating the following database fields for field samples and field QC only: VALID\_QUAL, VALIDATION\_LEVEL, VALIDATION, VALID\_DATE, BIAS, and DV\_COMMENT.

The remainder of this report documents “exceptions” to the NBH LTMV QAPP criteria or clarifications of data reported. QC elements not discussed below met all QAPP criteria. The full documentation of all QC elements reviewed during the Tier I+ validation are presented in the attached Data Validation Checklists.

### **Sample Receipt and Holding Time**

The sediment samples were received at the laboratory intact in seven shipments at 2.0°C to 3.5°C. Aliquots of the “as-received” samples were analyzed for TOC, Grain Size, and percent solids. Samples were frozen upon receipt to arrest holding time for TOC analysis. All samples had percent solids content of 34-80%; therefore, these sediment samples were air-dried, as required by the QAPP, prior to Congener analysis. After air-drying, the percent solids content for all samples was greater than 70%.

### **Accuracy**

The Method Blank was non-detect for TOC; therefore, blank action was not required.

The Method Blank reported detected results for several Congeners. Comparisons of the levels reported in the method blank with the levels reported in the samples were made and the following blank actions were taken:

- 2,2',3,5'-Tetrachlorobiphenyl (BZ#44), 2,2',5,5'-Tetrachlorobiphenyl (BZ#52), and 2,2',4,5,5'-Pentachlorobiphenyl (BZ#101) were negated (U) at the surrogate-corrected level found in sample 507825.

There was no Equipment Blank required to be collected along with these sediment samples.

Surrogate recovery did not meet criteria for five samples: 503525, 503925, 504425, 504625, and 504825. One of the two surrogates was recovered high compared to criteria in all five samples. For these samples, the detected results were surrogate-recovery corrected, as required by the LTMV QAPP, using only the one surrogate in each sample that was recovered within criteria. As a consequence of performing this recovery correction calculation, the impact of the surrogates outside criteria on the sample data is uncertain; therefore, all detected results in these five samples were estimated (J) due to conflicting surrogate recovery results.

All 18 NOAA Congeners recovered within criteria in the LCS and LCSD except for 2,2',5,5'-Tetrachlorobiphenyl (BZ#52), which was recovered high in the LCS. Since the LCSD recovery and RPD between the LCS and LCSD were acceptable for this Congener, no action to qualify sample data was taken based on professional judgment.

Congener recoveries in the MS/MSD analysis conducted on sample 507825 were all acceptable indicating acceptable accuracy for PCB Congener analysis of this matrix. TOC recovery in the MS analysis of sample 507825 was acceptable; indicating acceptable accuracy for TOC in the site matrix.

The Standard Reference Material (SRM NY/NJ Waterway Sediment) reported acceptable recovery for all Congeners certified in this SRM except 2,3',4,4'-Tetrachlorobiphenyl (BZ#66), 2,2',3,3',4,4'-Hexachlorobiphenyl (BZ#128), 2,2',3,3',4,4',5,6-Octachlorobiphenyl (BZ#195), and 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (BZ#206), which were recovered outside criteria. Since the LCS/LCSD and MS/MSD recoveries for these Congeners were within criteria, no action to qualify sample data was taken based on professional judgment. The TOC SRM reported acceptable recoveries for TOC certified in this SRM.

### **Precision**

LCS/LCSD precision was acceptable for all 18 NOAA Congeners except 2,3,3',4,4'-Pentachlorobiphenyl (BZ#105). All 2,3,3',4,4'-Pentachlorobiphenyl (BZ#105) data were estimated (J) due to LCS/LCSD imprecision, as shown in Table 2.

MS/MSD precision in the analysis of sample 507825 was acceptable for all 18 NOAA Congeners. Sample/MD precision for TOC analysis of 507825, as well as precision between all replicates of TOC reported for each sample, was acceptable. These results indicate acceptable precision and representativeness of these sediments for analysis of the NOAA PCB Congeners and TOC.

Field Duplicate (FD) precision was acceptable for all 18 NOAA Congeners and TOC in the FD pair 503325 and 508135. These results are an indication of acceptable precision and representativeness of these sediment samples to the site location for PCB Congeners and TOC.

### **Sensitivity & Reporting**

All samples met sensitivity requirements for PCB Congeners and TOC as indicated in NBH LTMV QAPP Table 1-3.

Data users should compute the average of the TOC replicate results (duplicate burns) for each sample and use this arithmetic average as the valid result for TOC.

An investigation by NEH into previous reporting of LTM data by Battelle indicated that Congener data were surrogate-recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate-recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting previous LTM data (LTMIV and prior monitoring data), Alpha's process for reporting LTMV results, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events reported by Battelle.

For Congener samples where the surrogates are not recovered because of analytical dilutions or when results were non-detect, the DV\_COMMENT "K2" was added to the validated database file to indicate that the reported value was not surrogate-recovery corrected.

For Congener samples where surrogate-recovery correction was performed, a separate Surrogate Recovery Correction excel worksheet was constructed (as part of the Data Validation Checklist process) showing the original lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. For surrogate-corrected results, the project database file was updated as follows:

1. The surrogate-corrected value, as shown in the Surrogate Recovery Correction worksheet, replaced the lab RESULT value in the validated database file;
2. The qualifier "K" was added to the VALID\_QUAL field to identify the result as surrogate-recovery corrected; and
3. "K1" was added to the DV\_COMMENT field as the DV code to further indicate that the reported result was surrogate-recovery corrected.

Non-detects for Congeners were reported by Alpha at the Reporting Limit (RL), consistent with the LTMV QAPP requirements. Since non-detected results are not comparable between Alpha and Battelle because the basis for the non-detects are different (RL vs. MDL), non-detects and reporting limits were not surrogate-recovery corrected in the LTMV data.

For this SDG, all samples reported surrogate recoveries. For samples 503525, 503925, 504425, 504625, and 504825, one of the two surrogates were not recovered within criteria; therefore, the other surrogate, recovered within criteria, was used for correction of all detected Congener results. Surrogate-recovery correction was performed for these eight samples, as documented in *Surrogate Recovery Correction\_L0912899*. Actions taken are listed below in Table 2.

Results reported below the sample-specific RLs are considered uncertain because they are below the calibration range. During this review, data below the sample-specific RLs were qualified as estimated (J), as shown in Table 2, and as described in the Data Validation Checklist.

The laboratory reported all results from DF > 1 analyses with a "D" qualifier. At Battelle's request, these "D" qualifiers were maintained during the DV process.

Table 2. Summary of Data Validation Actions

| <b>Field Sample ID</b>  | <b>Analyte</b>   | <b>Qualifier</b> | <b>Bias</b> | <b>Validation Comments</b>   |
|---|--|------------------|-------------|--|
| 503425, 503625,<br>503725, 503825,<br>504125, 504225,<br>504325, & 504725                             | All Congeners except:<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-<br>Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue | DK / K           |             | Reported value is surrogate recovery corrected   |
| 503425, 503625,<br>503725, 503825,<br>504125, 504225,<br>504325, 504725,<br>503325, 504025,<br>508135 | 2,3,3',4,4'-Pentachlorobiphenyl  | DJK / JK         | I           | Reported value is surrogate recovery corrected + LCS/LCSD imprecision  |
| 503425, 503625,<br>503725, 503825,<br>504125, 504225,<br>504325, & 504725                             | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-<br>Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue  | DU / U           |             | Reported value is not surrogate recovery corrected   |
| 503325  | All Congeners except:<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl &<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl   | DK               |             | Reported value is surrogate recovery corrected   |
| 503325  | 2,2',3,3',4,4',5,6-Octachlorobiphenyl &<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl  | DU               |             | Reported value is not surrogate recovery corrected   |
| 504025  | All Congeners except:<br>2,3,3',4,4'-Pentachlorobiphenyl &<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl  | DK               |             | Reported value is surrogate recovery corrected   |
| 504025  | 2,2',3,3',4,4',5,6-Octachlorobiphenyl  | DU               |             | Reported value is not surrogate recovery corrected   |
| 507825  | 2,2',3,4',5,5',6-Heptachlorobiphenyl   | JK               | I           | Reported value is surrogate recovery corrected + Result uncertain below the calibration range                        |
| 507825  | 2,3,3',4,4'-Pentachlorobiphenyl  | JK               | I           | Reported value is surrogate recovery corrected + LCS/LCSD imprecision + Result uncertain below the calibration range |
| 507825  | 2,3',4,4'-Tetrachlorobiphenyl,<br>2,3',4,4',5-Pentachlorobiphenyl,<br>2,2',3,4,4',5'-Hexachlorobiphenyl, &<br>2,2',4,4',5,5'-Hexachlorobiphenyl  | K                |             | Reported value is surrogate recovery corrected   |

Table 2. Summary of Data Validation Actions - continued

| <b>Field Sample ID</b>                         | <b>Analyte</b>  | <b>Qualifier</b> | <b>Bias</b> | <b>Validation Comments</b>   |
|--|---|------------------|-------------|--|
| 507825   | 2,2',3,5'-Tetrachlorobiphenyl,<br>2,2',5,5'-Tetrachlorobiphenyl, &<br>2,2',4,5,5'-Pentachlorobiphenyl   | UK               |             | Reported value is surrogate recovery corrected + Result Negated due to Blank Action                    |
| 507825   | 2,4'-Dichlorobiphenyl,<br>2,2',5-Trichlorobiphenyl,<br>2,4,4'-Trichlorobiphenyl,<br>2,2',3,3',4,4'-Hexachlorobiphenyl,<br>2,2',3,3',4,4',5-Heptachlorobiphenyl,<br>2,2',3,4,4',5,5'-Heptachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl,<br>& Decachlorobiphenyl - Homologue | U                |             | Reported value is not surrogate recovery corrected   |
| 508135   | All Congeners except:<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl &<br>Decachlorobiphenyl - Homologue  | DK               |             | Reported value is surrogate recovery corrected   |
| 508135   | 2,2',3,3',4,4',5,6-Octachlorobiphenyl   | DU               |             | Reported value is not surrogate recovery corrected   |
| 508135   | Decachlorobiphenyl - Homologue  | DJK              | I           | Reported value is surrogate recovery corrected + Result uncertain below the calibration range          |
| 503525   | All Congeners except:<br>2,3,3',4,4'-Pentachlorobiphenyl &<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl   | DJK              | I           | Reported value is surrogate recovery corrected + Conflicting surrogate recovery                        |
| 503525, 503925,<br>504425, 504625, &<br>504825 | 2,3,3',4,4'-Pentachlorobiphenyl   | DJK              | I           | Reported value is surrogate recovery corrected + Conflicting surrogate recovery + LCS/LCSD imprecision |
| 503525   | 2,2',3,3',4,4',5,6-Octachlorobiphenyl   | DU               |             | Reported value is not surrogate recovery corrected   |
| 503925 & 504425                                | All Congeners except:<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl &<br>Decachlorobiphenyl - Homologue  | DJK              | I           | Reported value is surrogate recovery corrected + Conflicting surrogate recovery                        |

Table 2. Summary of Data Validation Actions - continued

| <b>Field Sample ID</b> | <b>Analyte</b>   | <b>Qualifier</b> | <b>Bias</b> | <b>Validation Comments</b>   |
|------------------------|--|------------------|-------------|--|
| 503925 & 504425        | 2,2',3,3',4,4',5,6-Octachlorobiphenyl  | DU               |             | Reported value is not surrogate recovery corrected   |
| 503925                 | Decachlorobiphenyl - Homologue   | DJK              | I           | Reported value is surrogate recovery corrected + Conflicting surrogate recovery + Result uncertain below the calibration range |
| 504425                 | Decachlorobiphenyl - Homologue   | DU               |             | Reported value is not surrogate recovery corrected   |
| 504625 & 504825        | All Congeners except:<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue | DJK              | I           | Reported value is surrogate recovery corrected + Conflicting surrogate recovery  |
| 504625 & 504825        | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue  | DU               |             | Reported value is not surrogate recovery corrected   |

*Qualifiers: U = Analyte is non-detect at or above the sample-specific reporting limit (RL); UJ = Non-detect is estimated at the RL; J = Result is estimated; EB = analyte detected in associated equipment blank; EMPC = estimated maximum possible concentration (PCB congeners only); R = Result is rejected and is unusable for project decisions; D = result reported from a dilution analysis (added by laboratory); K = Result is Surrogate Recovery Corrected.*

*Bias: L = Low; H = High; I = Indeterminate*

*Abbreviations used in Table 2:*

*LCS = Laboratory Control Sample*

*LCSD = Laboratory Control Sample Duplicate*

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                       | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|---|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 503325  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                             | 8   | DBOB                          | 104    | D        | 179                         | UG/KG   |
| 503325  | 10       | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                         | 18  | DBOB                          | 595    | D        | 1026                        | UG/KG   |
| 503325  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                          | 28  | DBOB                          | 1840   | D        | 3172                        | UG/KG   |
| 503325  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                     | 44  | DBOB                          | 834    | D        | 1438                        | UG/KG   |
| 503325  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                     | 52  | DBOB                          | 1980   | D        | 3414                        | UG/KG   |
| 503325  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                     | 66  | DBOB                          | 317    | D        | 547                         | UG/KG   |
| 503325  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                   | 101 | DBOB                          | 1580   | D        | 2724                        | UG/KG   |
| 503325  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                   | 105 | BZ198                         | 332    | D        | 305                         | UG/KG   |
| 503325  | 10       | 31508-00-6    | 2,3',4,4',5'-Pentachlorobiphenyl                  | 118 | BZ198                         | 1380   | D        | 1266                        | UG/KG   |
| 503325  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                 | 128 | BZ198                         | 255    | D        | 234                         | UG/KG   |
| 503325  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                 | 138 | BZ198                         | 1150   | D        | 1055                        | UG/KG   |
| 503325  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                 | 153 | BZ198                         | 696    | D        | 639                         | UG/KG   |
| 503325  | 10       | 35065-30-6    | 2,2',3,3',4,4',5'-Heptachlorobiphenyl             | 170 | BZ198                         | 141    | D        | 129                         | UG/KG   |
| 503325  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl              | 180 | BZ198                         | 155    | D        | 142                         | UG/KG   |
| 503325  | 10       | 52663-68-0    | 2,2',3,4',5,5',6'-Heptachlorobiphenyl             | 187 | BZ198                         | 121    | D        | 111                         | UG/KG   |
| 503325  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6'-Octachlorobiphenyl            | 195 | BZ198                         | 4.07   | DU       | NA                          | UG/KG   |
| 503325  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl         | 206 | BZ198                         | 4.07   | DU       | NA                          | UG/KG   |
| 503325  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                    | 209 | BZ198                         | 4.23   | D        | 3.9                         | UG/KG   |
| 503325  | 10       | CS-10386-84-2 | Dbob  |     |                               | 58     | D        |                             | PCT_REC |
| 503325  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6'-Octachlorobiphenyl (Obsolete) | 198 |                               | 109    | D        |                             | PCT_REC |
| 503425  | 2        | 34883-43-7    | 2,4'-Dichlorobiphenyl                             | 8   | DBOB                          | 8.12   | D        | 15.3                        | UG/KG   |
| 503425  | 2        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                         | 18  | DBOB                          | 33.9   | D        | 64.0                        | UG/KG   |
| 503425  | 2        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                          | 28  | DBOB                          | 112    | D        | 211                         | UG/KG   |
| 503425  | 2        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                     | 44  | DBOB                          | 39.1   | D        | 73.8                        | UG/KG   |
| 503425  | 2        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                     | 52  | DBOB                          | 103    | D        | 194                         | UG/KG   |
| 503425  | 2        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                     | 66  | DBOB                          | 12.6   | D        | 23.8                        | UG/KG   |
| 503425  | 2        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                   | 101 | DBOB                          | 64.6   | D        | 122                         | UG/KG   |
| 503425  | 2        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                   | 105 | BZ198                         | 12.8   | D        | 16.4                        | UG/KG   |
| 503425  | 2        | 31508-00-6    | 2,3',4,4',5'-Pentachlorobiphenyl                  | 118 | BZ198                         | 51.7   | D        | 66.3                        | UG/KG   |
| 503425  | 2        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                 | 128 | BZ198                         | 9.72   | D        | 12.5                        | UG/KG   |
| 503425  | 2        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                 | 138 | BZ198                         | 45.4   | D        | 58.2                        | UG/KG   |
| 503425  | 2        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                 | 153 | BZ198                         | 31     | D        | 39.7                        | UG/KG   |
| 503425  | 2        | 35065-30-6    | 2,2',3,3',4,4',5'-Heptachlorobiphenyl             | 170 | BZ198                         | 7.1    | D        | 9.1                         | UG/KG   |
| 503425  | 2        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl              | 180 | BZ198                         | 7.82   | D        | 10.0                        | UG/KG   |
| 503425  | 2        | 52663-68-0    | 2,2',3,4',5,5',6'-Heptachlorobiphenyl             | 187 | BZ198                         | 7.04   | D        | 9.0                         | UG/KG   |
| 503425  | 2        | 52663-78-2    | 2,2',3,3',4,4',5,6'-Octachlorobiphenyl            | 195 | BZ198                         | 0.681  | DU       | NA                          | UG/KG   |
| 503425  | 2        | 40186-72-9    | 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl         | 206 | BZ198                         | 0.681  | DU       | NA                          | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 503425  | 2        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.681  | DU       | NA                          | UG/KG   |
| 503425  | 2        | CS-10386-84-2 | Dbob   |     |                               | 53     | D        |                             | PCT_REC |
| 503425  | 2        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 78     | D        |                             | PCT_REC |
| 503525  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 110    | D        | 157                         | UG/KG   |
| 503525  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 654    | D        | 934                         | UG/KG   |
| 503525  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 2050   | D        | 2929                        | UG/KG   |
| 503525  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 924    | D        | 1320                        | UG/KG   |
| 503525  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 2030   | D        | 2900                        | UG/KG   |
| 503525  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 435    | D        | 621                         | UG/KG   |
| 503525  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1900   | D        | 2714                        | UG/KG   |
| 503525  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 441    | D        | 630                         | UG/KG   |
| 503525  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 1660   | D        | 2371                        | UG/KG   |
| 503525  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 309    | D        | 441                         | UG/KG   |
| 503525  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 1410   | D        | 2014                        | UG/KG   |
| 503525  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 705    | D        | 1007                        | UG/KG   |
| 503525  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 160    | D        | 229                         | UG/KG   |
| 503525  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 178    | D        | 254                         | UG/KG   |
| 503525  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 122    | D        | 174                         | UG/KG   |
| 503525  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 4.13   | DU       | NA                          | UG/KG   |
| 503525  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 12.6   | D        | 18.0                        | UG/KG   |
| 503525  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 8.22   | D        | 11.7                        | UG/KG   |
| 503525  | 10       | CS-10386-84-2 | Dbob   |     |                               | 70     | D        |                             | PCT_REC |
| 503525  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 131    | D        |                             | PCT_REC |
| 503625  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 2.54   |          | 5.2                         | UG/KG   |
| 503625  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 19     |          | 38.8                        | UG/KG   |
| 503625  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 71.9   |          | 147                         | UG/KG   |
| 503625  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 17.9   |          | 36.5                        | UG/KG   |
| 503625  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 61.8   |          | 126                         | UG/KG   |
| 503625  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 10.1   |          | 20.6                        | UG/KG   |
| 503625  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 40.7   |          | 83.1                        | UG/KG   |
| 503625  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 8.46   |          | 8.3                         | UG/KG   |
| 503625  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 33.4   |          | 32.7                        | UG/KG   |
| 503625  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 6.46   |          | 6.3                         | UG/KG   |
| 503625  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 28.5   |          | 27.9                        | UG/KG   |
| 503625  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 18.9   |          | 18.5                        | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 503625  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 4.5    |          | 4.4                         | UG/KG   |
| 503625  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 3.28   |          | 3.2                         | UG/KG   |
| 503625  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 2.75   |          | 2.7                         | UG/KG   |
| 503625  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.334  | U        | NA                          | UG/KG   |
| 503625  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.334  | U        | NA                          | UG/KG   |
| 503625  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.334  | U        | NA                          | UG/KG   |
| 503625  | 1        | CS-10386-84-2 | Dbob   |     |                               | 49     |          |                             | PCT_REC |
| 503625  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 102    |          |                             | PCT_REC |
| 503725  | 5        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 19.3   | D        | 37.1                        | UG/KG   |
| 503725  | 5        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 115    | D        | 221                         | UG/KG   |
| 503725  | 5        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 416    | D        | 800                         | UG/KG   |
| 503725  | 5        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 148    | D        | 285                         | UG/KG   |
| 503725  | 5        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 378    | D        | 727                         | UG/KG   |
| 503725  | 5        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 70.1   | D        | 135                         | UG/KG   |
| 503725  | 5        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 276    | D        | 531                         | UG/KG   |
| 503725  | 5        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 64.8   | D        | 51.0                        | UG/KG   |
| 503725  | 5        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 236    | D        | 186                         | UG/KG   |
| 503725  | 5        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 48.1   | D        | 37.9                        | UG/KG   |
| 503725  | 5        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 204    | D        | 161                         | UG/KG   |
| 503725  | 5        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 139    | D        | 109                         | UG/KG   |
| 503725  | 5        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 28.7   | D        | 22.6                        | UG/KG   |
| 503725  | 5        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 29.2   | D        | 23.0                        | UG/KG   |
| 503725  | 5        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 26.4   | D        | 20.8                        | UG/KG   |
| 503725  | 5        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 1.79   | DU       | NA                          | UG/KG   |
| 503725  | 5        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 1.79   | DU       | NA                          | UG/KG   |
| 503725  | 5        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 1.79   | DU       | NA                          | UG/KG   |
| 503725  | 5        | CS-10386-84-2 | Dbob   |     |                               | 52     | D        |                             | PCT_REC |
| 503725  | 5        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 127    | D        |                             | PCT_REC |
| 503825  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 34.7   | D        | 57.8                        | UG/KG   |
| 503825  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 130    | D        | 217                         | UG/KG   |
| 503825  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 810    | D        | 1350                        | UG/KG   |
| 503825  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 139    | D        | 232                         | UG/KG   |
| 503825  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 391    | D        | 652                         | UG/KG   |
| 503825  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 80.4   | D        | 134                         | UG/KG   |
| 503825  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 318    | D        | 530                         | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 503825  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 70.8   | D        | 58.0                        | UG/KG   |
| 503825  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 304    | D        | 249                         | UG/KG   |
| 503825  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 47.2   | D        | 38.7                        | UG/KG   |
| 503825  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 216    | D        | 177                         | UG/KG   |
| 503825  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 196    | D        | 161                         | UG/KG   |
| 503825  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 22     | D        | 18.0                        | UG/KG   |
| 503825  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 30.3   | D        | 24.8                        | UG/KG   |
| 503825  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 24.8   | D        | 20.3                        | UG/KG   |
| 503825  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.6    | DU       | NA                          | UG/KG   |
| 503825  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.6    | DU       | NA                          | UG/KG   |
| 503825  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 3.6    | DU       | NA                          | UG/KG   |
| 503825  | 10       | CS-10386-84-2 | Dbob   |     |                               | 60     | D        |                             | PCT_REC |
| 503825  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 122    | D        |                             | PCT_REC |
| 503925  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 62.2   | D        | 120                         | UG/KG   |
| 503925  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 355    | D        | 683                         | UG/KG   |
| 503925  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1380   | D        | 2654                        | UG/KG   |
| 503925  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 494    | D        | 950                         | UG/KG   |
| 503925  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1370   | D        | 2635                        | UG/KG   |
| 503925  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 203    | D        | 390                         | UG/KG   |
| 503925  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1010   | D        | 1942                        | UG/KG   |
| 503925  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 237    | D        | 456                         | UG/KG   |
| 503925  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 900    | D        | 1731                        | UG/KG   |
| 503925  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 175    | D        | 337                         | UG/KG   |
| 503925  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 789    | D        | 1517                        | UG/KG   |
| 503925  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 423    | D        | 813                         | UG/KG   |
| 503925  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 98.8   | D        | 190                         | UG/KG   |
| 503925  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 104    | D        | 200                         | UG/KG   |
| 503925  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 81.7   | D        | 157                         | UG/KG   |
| 503925  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 3.68   | DU       | NA                          | UG/KG   |
| 503925  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 15.7   | D        | 30.2                        | UG/KG   |
| 503925  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 3.32   | DJ       | 6.4                         | UG/KG   |
| 503925  | 10       | CS-10386-84-2 | Dbob   |     |                               | 52     | D        |                             | PCT_REC |
| 503925  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 168    | D        |                             | PCT_REC |
| 504025  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 66.9   | D        | 119                         | UG/KG   |
| 504025  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 407    | D        | 727                         | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 504025  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1410   | D        | 2518                        | UG/KG   |
| 504025  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 482    | D        | 861                         | UG/KG   |
| 504025  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1280   | D        | 2286                        | UG/KG   |
| 504025  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 226    | D        | 404                         | UG/KG   |
| 504025  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 971    | D        | 1734                        | UG/KG   |
| 504025  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 216    | D        | 216                         | UG/KG   |
| 504025  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 832    | D        | 832                         | UG/KG   |
| 504025  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 162    | D        | 162                         | UG/KG   |
| 504025  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 712    | D        | 712                         | UG/KG   |
| 504025  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 415    | D        | 415                         | UG/KG   |
| 504025  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 101    | D        | 101                         | UG/KG   |
| 504025  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 107    | D        | 107                         | UG/KG   |
| 504025  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 83.8   | D        | 83.8                        | UG/KG   |
| 504025  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.87   | DU       | NA                          | UG/KG   |
| 504025  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 10.4   | D        | 10.4                        | UG/KG   |
| 504025  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 4.8    | D        | 4.8                         | UG/KG   |
| 504025  | 10       | CS-10386-84-2 | Dbob   |     |                               | 56     | D        |                             | PCT_REC |
| 504025  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 100    | D        |                             | PCT_REC |
| 504125  | 5        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 19.3   | D        | 26.1                        | UG/KG   |
| 504125  | 5        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 114    | D        | 154                         | UG/KG   |
| 504125  | 5        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 408    | D        | 551                         | UG/KG   |
| 504125  | 5        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 149    | D        | 201                         | UG/KG   |
| 504125  | 5        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 349    | D        | 472                         | UG/KG   |
| 504125  | 5        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 63.7   | D        | 86.1                        | UG/KG   |
| 504125  | 5        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 278    | D        | 376                         | UG/KG   |
| 504125  | 5        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 70.9   | D        | 93.3                        | UG/KG   |
| 504125  | 5        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 250    | D        | 329                         | UG/KG   |
| 504125  | 5        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 48.7   | D        | 64.1                        | UG/KG   |
| 504125  | 5        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 206    | D        | 271                         | UG/KG   |
| 504125  | 5        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 170    | D        | 224                         | UG/KG   |
| 504125  | 5        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 23.4   | D        | 30.8                        | UG/KG   |
| 504125  | 5        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 28.7   | D        | 37.8                        | UG/KG   |
| 504125  | 5        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 15.5   | D        | 20.4                        | UG/KG   |
| 504125  | 5        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 1.82   | DU       | NA                          | UG/KG   |
| 504125  | 5        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 1.82   | DU       | NA                          | UG/KG   |
| 504125  | 5        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 1.82   | DU       | NA                          | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 504125  | 5        | CS-10386-84-2 | Dbob   |     |                               | 74     | D        |                             | PCT_REC |
| 504125  | 5        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 76     | D        |                             | PCT_REC |
| 504225  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 88.3   | D        | 147                         | UG/KG   |
| 504225  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 196    | D        | 327                         | UG/KG   |
| 504225  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1210   | D        | 2017                        | UG/KG   |
| 504225  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 260    | D        | 433                         | UG/KG   |
| 504225  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 630    | D        | 1050                        | UG/KG   |
| 504225  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 182    | D        | 303                         | UG/KG   |
| 504225  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 526    | D        | 877                         | UG/KG   |
| 504225  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 160    | D        | 139                         | UG/KG   |
| 504225  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 534    | D        | 464                         | UG/KG   |
| 504225  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 99.9   | D        | 86.9                        | UG/KG   |
| 504225  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 435    | D        | 378                         | UG/KG   |
| 504225  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 250    | D        | 217                         | UG/KG   |
| 504225  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 53.1   | D        | 46.2                        | UG/KG   |
| 504225  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 56.3   | D        | 49.0                        | UG/KG   |
| 504225  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 46.7   | D        | 40.6                        | UG/KG   |
| 504225  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 4.96   | DU       | NA                          | UG/KG   |
| 504225  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 4.96   | DU       | NA                          | UG/KG   |
| 504225  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 4.96   | DU       | NA                          | UG/KG   |
| 504225  | 10       | CS-10386-84-2 | Dbob   |     |                               | 60     | D        |                             | PCT_REC |
| 504225  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 115    | D        |                             | PCT_REC |
| 504325  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 59.5   | D        | 86.2                        | UG/KG   |
| 504325  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 185    | D        | 268                         | UG/KG   |
| 504325  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 958    | D        | 1388                        | UG/KG   |
| 504325  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 229    | D        | 332                         | UG/KG   |
| 504325  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 496    | D        | 719                         | UG/KG   |
| 504325  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 142    | D        | 206                         | UG/KG   |
| 504325  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 498    | D        | 722                         | UG/KG   |
| 504325  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 142    | D        | 116                         | UG/KG   |
| 504325  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 473    | D        | 388                         | UG/KG   |
| 504325  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 91.7   | D        | 75.2                        | UG/KG   |
| 504325  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 397    | D        | 325                         | UG/KG   |
| 504325  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 212    | D        | 174                         | UG/KG   |
| 504325  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 52.8   | D        | 43.3                        | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 504325  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 56.5   | D        | 46.3                        | UG/KG   |
| 504325  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 40.5   | D        | 33.2                        | UG/KG   |
| 504325  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.44   | DU       | NA                          | UG/KG   |
| 504325  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.44   | DU       | NA                          | UG/KG   |
| 504325  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 3.44   | DU       | NA                          | UG/KG   |
| 504325  | 10       | CS-10386-84-2 | Dbob   |     |                               | 69     | D        |                             | PCT_REC |
| 504325  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 122    | D        |                             | PCT_REC |
| 504425  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 21     | D        | 31.8                        | UG/KG   |
| 504425  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 146    | D        | 221                         | UG/KG   |
| 504425  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 627    | D        | 950                         | UG/KG   |
| 504425  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 179    | D        | 271                         | UG/KG   |
| 504425  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 418    | D        | 633                         | UG/KG   |
| 504425  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 93.1   | D        | 141                         | UG/KG   |
| 504425  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 448    | D        | 679                         | UG/KG   |
| 504425  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 114    | D        | 173                         | UG/KG   |
| 504425  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 385    | D        | 583                         | UG/KG   |
| 504425  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 83.6   | D        | 127                         | UG/KG   |
| 504425  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 351    | D        | 532                         | UG/KG   |
| 504425  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 337    | D        | 511                         | UG/KG   |
| 504425  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 50.7   | D        | 76.8                        | UG/KG   |
| 504425  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 58.6   | D        | 88.8                        | UG/KG   |
| 504425  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 72.8   | D        | 110                         | UG/KG   |
| 504425  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 3.51   | DU       | NA                          | UG/KG   |
| 504425  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 10.1   | D        | 15.3                        | UG/KG   |
| 504425  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 3.51   | DU       | NA                          | UG/KG   |
| 504425  | 10       | CS-10386-84-2 | Dbob   |     |                               | 66     | D        |                             | PCT_REC |
| 504425  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 160    | D        |                             | PCT_REC |
| 504625  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 35.7   | D        | 44.6                        | UG/KG   |
| 504625  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 170    | D        | 213                         | UG/KG   |
| 504625  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 800    | D        | 1000                        | UG/KG   |
| 504625  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 198    | D        | 248                         | UG/KG   |
| 504625  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 419    | D        | 524                         | UG/KG   |
| 504625  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 86.2   | D        | 108                         | UG/KG   |
| 504625  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 347    | D        | 434                         | UG/KG   |
| 504625  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 102    | D        | 128                         | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 504625  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 325    | D        | 406                         | UG/KG   |
| 504625  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 64.5   | D        | 80.6                        | UG/KG   |
| 504625  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 280    | D        | 350                         | UG/KG   |
| 504625  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 218    | D        | 273                         | UG/KG   |
| 504625  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 36.9   | D        | 46.1                        | UG/KG   |
| 504625  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 29.3   | D        | 36.6                        | UG/KG   |
| 504625  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 30.1   | D        | 37.6                        | UG/KG   |
| 504625  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 4.71   | DU       | NA                          | UG/KG   |
| 504625  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 4.71   | DU       | NA                          | UG/KG   |
| 504625  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 4.71   | DU       | NA                          | UG/KG   |
| 504625  | 10       | CS-10386-84-2 | Dbob   |     |                               | 80     | D        |                             | PCT_REC |
| 504625  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 156    | D        |                             | PCT_REC |
| 504725  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 92.7   | D        | 131                         | UG/KG   |
| 504725  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 164    | D        | 231                         | UG/KG   |
| 504725  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 803    | D        | 1131                        | UG/KG   |
| 504725  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 215    | D        | 303                         | UG/KG   |
| 504725  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 510    | D        | 718                         | UG/KG   |
| 504725  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 93.6   | D        | 132                         | UG/KG   |
| 504725  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 460    | D        | 648                         | UG/KG   |
| 504725  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 135    | D        | 108                         | UG/KG   |
| 504725  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 413    | D        | 330                         | UG/KG   |
| 504725  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 97.3   | D        | 77.8                        | UG/KG   |
| 504725  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 394    | D        | 315                         | UG/KG   |
| 504725  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 216    | D        | 173                         | UG/KG   |
| 504725  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 48.8   | D        | 39.0                        | UG/KG   |
| 504725  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 54.6   | D        | 43.7                        | UG/KG   |
| 504725  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 39.8   | D        | 31.8                        | UG/KG   |
| 504725  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 3.46   | DU       | NA                          | UG/KG   |
| 504725  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.46   | DU       | NA                          | UG/KG   |
| 504725  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 3.46   | DU       | NA                          | UG/KG   |
| 504725  | 10       | CS-10386-84-2 | Dbob   |     |                               | 71     | D        |                             | PCT_REC |
| 504725  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 125    | D        |                             | PCT_REC |
| 504825  | 2        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 5.74   | D        | 7.1                         | UG/KG   |
| 504825  | 2        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 36.9   | D        | 45.6                        | UG/KG   |
| 504825  | 2        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 145    | D        | 179                         | UG/KG   |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 504825  | 2        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 36.8   | D        | 45.4                        | UG/KG   |
| 504825  | 2        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 85.7   | D        | 106                         | UG/KG   |
| 504825  | 2        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 17.1   | D        | 21.1                        | UG/KG   |
| 504825  | 2        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 73.7   | D        | 91.0                        | UG/KG   |
| 504825  | 2        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 20.9   | D        | 25.8                        | UG/KG   |
| 504825  | 2        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 69.6   | D        | 85.9                        | UG/KG   |
| 504825  | 2        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 15.2   | D        | 18.8                        | UG/KG   |
| 504825  | 2        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 63.6   | D        | 78.5                        | UG/KG   |
| 504825  | 2        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 53.3   | D        | 65.8                        | UG/KG   |
| 504825  | 2        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 9.94   | D        | 12.3                        | UG/KG   |
| 504825  | 2        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 12.6   | D        | 15.6                        | UG/KG   |
| 504825  | 2        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 8.14   | D        | 10.0                        | UG/KG   |
| 504825  | 2        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 0.68   | DU       | NA                          | UG/KG   |
| 504825  | 2        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 0.68   | DU       | NA                          | UG/KG   |
| 504825  | 2        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 0.68   | DU       | NA                          | UG/KG   |
| 504825  | 2        | CS-10386-84-2 | Dbob   |     |                               | 81     | D        |                             | PCT_REC |
| 504825  | 2        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 138    | D        |                             | PCT_REC |
| 507825  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 0.768  | B        | 1.02                        | UG/KG   |
| 507825  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1.88   | B        | 2.51                        | UG/KG   |
| 507825  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 0.604  |          | 0.81                        | UG/KG   |
| 507825  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1.36   | B        | 1.81                        | UG/KG   |
| 507825  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 0.31   | J        | 0.35                        | UG/KG   |
| 507825  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 1.63   |          | 1.83                        | UG/KG   |
| 507825  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 1.5    |          | 1.69                        | UG/KG   |
| 507825  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 1.48   |          | 1.66                        | UG/KG   |
| 507825  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.201  | J        | 0.226                       | UG/KG   |
| 507825  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.341  | U        | NA                          | UG/KG   |
| 507825  | 1        | CS-10386-84-2 | Dbob   |     |                               | 75     |          |                             | PCT_REC |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT    |
|---------|----------|---------------|--|-----|-------------------------------|--------|----------|-----------------------------|---------|
| 507825  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 89     |          |                             | PCT_REC |
| 508135  | 10       | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 85.3   | D        | 117                         | UG/KG   |
| 508135  | 10       | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 492    | D        | 674                         | UG/KG   |
| 508135  | 10       | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1820   | D        | 2493                        | UG/KG   |
| 508135  | 10       | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 672    | D        | 921                         | UG/KG   |
| 508135  | 10       | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1600   | D        | 2192                        | UG/KG   |
| 508135  | 10       | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 256    | D        | 351                         | UG/KG   |
| 508135  | 10       | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1250   | D        | 1712                        | UG/KG   |
| 508135  | 10       | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 266    | D        | 233                         | UG/KG   |
| 508135  | 10       | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 1100   | D        | 965                         | UG/KG   |
| 508135  | 10       | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 202    | D        | 177                         | UG/KG   |
| 508135  | 10       | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 908    | D        | 796                         | UG/KG   |
| 508135  | 10       | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 695    | D        | 610                         | UG/KG   |
| 508135  | 10       | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 120    | D        | 105                         | UG/KG   |
| 508135  | 10       | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 121    | D        | 106                         | UG/KG   |
| 508135  | 10       | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 93.7   | D        | 82                          | UG/KG   |
| 508135  | 10       | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 4.11   | DU       | NA                          | UG/KG   |
| 508135  | 10       | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 9.82   | D        | 8.61                        | UG/KG   |
| 508135  | 10       | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 2.84   | DJ       | 2.49                        | UG/KG   |
| 508135  | 10       | CS-10386-84-2 | Dbob   |     |                               | 73     | D        |                             | PCT_REC |
| 508135  | 10       | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 114    | D        |                             | PCT_REC |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912900

Lab: Alpha Analytical

Date Sampled: 9/25/09 through 9/28/09

Analysis: 18 NOAA PCB Congeners by GC/MS-SIM

No. Samples

16 + 1FD

Matrix:

Sediments

| Data Element | Preservation & HT | Surrogates %R 50-130%                            | LCS/LCSD                 | MS/MSD   | FD   | MB                           | RL                          | Issues with Qualifiers?                                       | Other  |
|--------------|-------------------|--|--------------------------|--|--|------------------------------|-----------------------------|---|--|
|              |                   |  | SRM %R 40-140% RPD ≤ 30% | %R 40-140% RPD ≤ 30%                             | RPD ≤ 30% SW RPD ≤ 50% SED                 | < RL or < 5x Conc. in sample | meets QAPP req. for matrix? |   |  |
| Yes          | √                 |  | √                        |  |  |                              |                             |   |  |
| No           |                   | Estimate (J) detects in 505025, 505325, & 505625 |                          | Estimate (J & UJ) BZ153, BZ180 & BZ206 in 505625 | Estimate (J) 11 results in 506425 & 508235 | See page 2                   | Estimate (J) 4 results < RL | Data qualified "D" by the lab for all samples analyzed DF > 1 | Surrogate recovery correct all samples - see "Surrogate Recovery Correction _L0912900.pdf" and page 4 of this report for details |

**Did the Laboratory Narrative contain any issues which may affect data quality? Yes; however, all issues were reported in the summary data.**

**Were the %solids acceptable (>30%)? Yes all > 82% solids after air-drying. Prior to air-drying, % solids were 33-82%.**

*The data package consisted of a laboratory narrative, data sheets for samples, Method Blanks (MB), laboratory control samples (LCS), Matrix Spike/Matrix Spike Duplicates (MS/MSD), and the executed chain-of-custody. Summary information for initial and continuing calibrations were not present nor were raw data for samples and quality control (QC) reported. This Tier I+ review assumed that initial calibrations and qualitative and quantitative determination of the 18 NOAA Congeners were acceptable unless an issue was raised in the laboratory narrative.*

**Comments:**

Samples were received intact at 1.6C to 3.5C in 6 shipments on the day of or day after sample collection (e.g., samples collected on 9/27 were received on 9/28/09). COC seals were absent from coolers; however, these were picked up from the site by a courier and delivered directly to the lab.

Samples were analyzed for % solids, TOC, and Grain size. All samples were also air-dried and subsequently analyzed for %solids - air-dried and 18 NOAA Congeners

*HT: Air-dried samples were extracted on 10/6/09 and analyzed by 10/27/09 - HT met - No action required.*

*Surrogates: both surrogates (DBOB and BZ198) were recovered within criteria in all samples except BZ198 recovered high (>130%) in samples 505025, 505325, and 505625. Since these samples were recovery corrected using the other surrogate (DBOB), it is unclear how these high BZ198 surrogate recoveries would have affected detected results. Since non-detects are not surrogate recovery corrected and since high recovery should not have affected the non-detects, only detected results in these three samples affected.*

*\*ACTION: All detected results estimated (J) in samples 505025, 505325, and 505625 due to conflicting Surrogate recoveries.*

*LCS: %Rec for LCS and LCSD were all within 40-140% for all 18 NOAA Congeners spiked and RPDs between LCS and LCSD all OK except BZ105 LCS high (146%) but LCSD and RPD OK. No Action taken for high LCS BZ105 since LCSD OK and RPD OK.*

Date: ~~4/5/10~~

Data Reviewer: Nancy C. Rothman, Ph.D.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912900

Lab: Alpha Analytical

Blank Action:                      Blanks Reviewed: Method Blank  
No EB associated with samples

| Blank ID  | Contaminant / Level | Matrix Related? | Action Level / Action *                               | Sample and Reported Result                          | Corrected Result |         |
|---|---------------------|-----------------|---|---|------------------|---------|
| Method Blank  | BZ#18 0.497 µg/Kg   | Y               | 2.485 µg/Kg   | 505825  | 0.369 J          | 0.369 U |
|   |                     |                 |   | 506325  | 1.73 B           | 1.73 U  |
|   |                     |                 |   | 506125  | 1.89 B           | 1.89 U  |
|   |                     |                 |   | All other samples were >>> BAL - No Action required |                  |         |
|   |                     |                 |   |   |                  |         |
| Method Blank  | BZ#28 0.740 µg/Kg   | Y               | 3.7 µg/Kg   | 505825  | 1.18 B           | 1.18 U  |
|   |                     |                 |   | 506325  | 3.28 B           | 3.28 U  |
|   |                     |                 |   | All other samples were >>> BAL - No Action required |                  |         |
|   |                     |                 |   |   |                  |         |
| Method Blank  | BZ#44 0.193 J µg/Kg | Y               | 0.965 µg/Kg   | 506325  | 0.493            | 0.493 U |
|   |                     |                 |   | 505825  | 0.504            | 0.504 U |
|   |                     |                 |   | All other samples were >>> BAL - No Action required |                  |         |
|   |                     |                 |   |   |                  |         |
| Method Blank  | BZ#52 0.587 µg/Kg   | Y               | 2.935 µg/Kg<br>(3.97 µg/Kg<br>Surrogate<br>Corrected) | 505825  | 1.14 B           | 1.14 U  |
|   |                     |                 |   | 506325  | 3.28 B           | 3.28 U  |
|   |                     |                 |   | All other samples were >>> BAL - No Action required |                  |         |
|   |                     |                 |   |   |                  |         |
| *Note : Blank Action Level surrogate corrected (using appropriate surrogates in the MB analysis) if Action Level near level reported in Surrogate corrected samples |                     |                 |   |   |                  |         |

Comments:  
SRM: NY/NJ Waterway Sediment. %Rec for Congeners in SRM were all within 40-140% except BZ#128 (166%) and BZ195 (194%). Since the LCS/LCSD recovery was acceptable for these Congeners, no action taken to qualify samples data based on these SRM results.

MS/MSD: performed on sample 505625. Sample, MS and MSD were analyzed at DF=5. Spike level (7.46 µg/Kg) too low for all 18 NOAA Congeners except for BZ195, BZ206, & BZ209 therefore %Recovery results meaningless for all but the last 3 Congeners. % Rec high for BZ206 in MS & MSD and RPD also out for this Congener. Precision between MS & MSD also not acceptable for BZ153 & BZ180. No action for high MS/MSD for BZ206 since unspiked sample was non-detect - action only taken for MS/MSD imprecision.

\*ACTION: BZ153, BZ180 & BZ206 estimated (J and UJ) in 505625 due to MS/MSD imprecision

Date: ~~4/5/10~~  
Data Reviewer: Nancy C. Rothman, Ph.D.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912900

Lab: Alpha Analytical

Comments:

*FD pair:* 506425 & 508235 - a comparison of results shown below

Field Duplicate Evaluation\_ Sample IDs:

Sample = 506425

FD = 508235

| Analyte Name                             | DF= 1*     | Sample<br>µg/Kg | Sample Result<br>Q Level | FD    | FD Result<br>Q Level | RPD   | Action        |
|--|------------|-----------------|--------------------------|-------|----------------------|-------|---------------|
|  | RL (µg/Kg) |                 |                          | µg/Kg |                      |       |               |
| 2,4'-Dichlorobiphenyl                    | 0.347      | 6.26            | > 2 x RL                 | 13.5  | > 2 x RL             | 73.3  | <b>J Both</b> |
| 2,2',5'-Trichlorobiphenyl                | 0.347      | 7.82            | > 2 x RL                 | 24.8  | > 2 x RL             | 104.1 | <b>J Both</b> |
| 2,4,4'-Trichlorobiphenyl                 | 0.347      | 26.3            | > 2 x RL                 | 74.9  | > 2 x RL             | 96.0  | <b>J Both</b> |
| 2,2',3,5'-Tetrachlorobiphenyl            | 0.347      | 12.2            | > 2 x RL                 | 24.9  | > 2 x RL             | 68.5  | <b>J Both</b> |
| 2,2',5,5'-Tetrachlorobiphenyl            | 0.347      | 19.7            | > 2 x RL                 | 51.6  | > 2 x RL             | 89.5  | <b>J Both</b> |
| 2,3',4,4'-Tetrachlorobiphenyl            | 0.347      | 9.28            | > 2 x RL                 | 15.2  | > 2 x RL             | 48.4  | None          |
| 2,2',4,5,5'-Pentachlorobiphenyl          | 0.347      | 18.9            | > 2 x RL                 | 47.1  | > 2 x RL             | 85.5  | <b>J Both</b> |
| 2,3,3',4,4'-Pentachlorobiphenyl          | 0.347      | 6.91            | > 2 x RL                 | 11.6  | > 2 x RL             | 50.7  | <b>J Both</b> |
| 2,3',4,4',5-Pentachlorobiphenyl          | 0.347      | 20.9            | > 2 x RL                 | 37.2  | > 2 x RL             | 56.1  | <b>J Both</b> |
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | 0.347      | 5.06            | > 2 x RL                 | 8.05  | > 2 x RL             | 45.6  | None          |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | 0.347      | 18.6            | > 2 x RL                 | 34.3  | > 2 x RL             | 59.4  | <b>J Both</b> |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | 0.347      | 12.3            | > 2 x RL                 | 17.1  | > 2 x RL             | 32.7  | None          |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | 0.347      | 1.7             | > 2 x RL                 | 2.09  | > 2 x RL             | 20.6  | None          |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | 0.347      | 2.09            | > 2 x RL                 | 4.41  | > 2 x RL             | 71.4  | <b>J Both</b> |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | 0.347      | 1.73            | > 2 x RL                 | 3.09  | > 2 x RL             | 56.4  | <b>J Both</b> |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | 0.347      | 0.347           | U RL                     | 0.346 | U RL                 | NA    | None          |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | 0.347      | 0.347           | U RL                     | 0.346 | U RL                 | NA    | None          |
| Decachlorobiphenyl                       | 0.347      | 0.347           | U RL                     | 0.346 | U RL                 | 0.3   | None          |

\* The sample and FD were both analyzed at DF=1

FD precision was not acceptable for 11 out of 18 NOAA Congeners (result > 2 x RL but RPD > 50%). Note both samples were surrogate recovery corrected prior to this evaluation.

*\*ACTION: 11 Congeners which exceeded FD precision criteria, as shown above, were estimated (J) in FD pair with indeterminate bias.*

Date: ~~4/5/10~~  
Data Reviewer: Nancy C. Rothman, Ph.D.

**New Bedford Harbor**  
**18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912900

Lab: Alpha Analytical

Comments:

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An investigation by NEH into previous reporting of LTM data by Battelle indicated that data were surrogate recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting, Alpha's process for reporting, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events.

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For samples where the surrogates are not recovered because of the dilution made for analysis of the sample, a DV Comment was added to the validated database file "K2" to indicate that the reported value was not surrogate recovery corrected. For samples with surrogates recovered, a separate excel worksheet has been constructed (Surrogate Recovery Correction \_ L09XXXX.xls) showing the lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. Non-detects are reported by Alpha at the Reporting Limit (RL) consistent with the QAPP. Since non-detects will not be comparable between Alpha and Battelle because the basis for the non-detects are different (MDL vs. RL), non-detects and reporting limits are not surrogate recovery corrected in the LTMV data.

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All samples in this SDG reported surrogate recoveries. The surrogate corrected values, as shown in Surrogate Recovery Correction\_L0912900.pdf, replaced the Lab Result values in the validated database file, the data were qualified "K" to indicate this change to the Lab Result values, and a DV Comment was added, "K1", to indicate that the Reported result was recovery corrected. For samples 505025, 505325, and 505625, one of the surrogates was recovered outside criteria. For these five samples, the surrogate which was recovered within criteria was used exclusively for correction of the samples data, as indicated in the technical memo of January 29, 2010.

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The lab reported results for 18 NOAA Congeners + 2 surrogates. All samples analyzed at DF=1 reported RLs for individual Congeners and PQLs below those requested in the QAPP; therefore, sensitivity was acceptable for these data. Samples with DF > 1 also met sensitivity requirements since the DF >1 was performed to ensure that all detects were reported within the instrument calibration range.

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The narrative did not raise any issues affecting quality that were not already addressed.

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4 results were reported at levels < RL and was flagged "J" by the lab. These 4 results were accepted with Indeterminate bias due to uncertainty in quantitation at a level below the instrument calibration range

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*Qualifiers* : All data were reported with "D" qualifiers to indicate results reported from a dilution analysis. As instructed by Battelle, these "D" qualifiers were not removed

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Date: ~~4/5/10~~  
Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912900

Lab: Alpha Analytical

**ACTIONS:**

Preservation: Cooled to 4 ± 2°C. Sediments may be frozen for up to 1 year to preserve sample prior to extraction. If temperature outside criteria, use professional judgment.

HT: Extraction: waters -7d <HT< 14 d, J det/ J NDs; HT >14 d, J det/R ND

Extraction: sediment - 14d <HT< 28 d, J det/ J NDs; HT >28 d, J det/R ND (freezing arrests HT)

Analysis of extract: 40d < Extract HT < 60d, J det/ J NDs; Extract HT > 60d; J det/ R NDs

Surrogates: % Recovery > 130%, J det/Accept ND; 10% ≤ % Recovery < 50%, J det/J NDs; Recovery < 10%, J det/R NDs.

LCS/LCSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs. RPD > 30%, J det/UJ NDs.

MS/MSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs- Unspiked Sample only. RPD > 30%, J det/UJ NDs.

FD: RPD > 30% (waters) or 50% (sediment) for results > 2 x RL, J det/UJ NDs. Use professional judgment for values < 2 x RL.

MBs: If contamination in blank(s) exists, Blank Action Level (BAL)= 5 x Level in Blank (on a sample-equivalent basis). If a sample result is < RL and < BAL, negate (U) result at RL; if value > RL but < BAL, negate (U) result at level reported; if value > BAL, no Action.

RLs: Verify RLs are sample-specific and meet PQL given in QAPP Addendum 2009 UFP - Worksheet #15. If result > upper calibration range, J result; if

Other Data qualified J by lab stays as J; data qualified E by lab becomes J; data qualified U by lab stays U; data qualified P by lab becomes J; data qualified B becomes

Qualifiers: either U or J based on actions taken for Method Blank (MB)

% solids: 10% < % solids < 30%, J det/R ND; % solids < 10%, R detects and NDs.

**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated

**Reference:** Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, Massachusetts, September 2009 and Region I, EPA-NE Pesticide/PCB Data Validation Functional Guidelines - Part III, Draft February 2004

Laboratory Data were reported using BZ# only - the following table shows a cross reference of BZ# to Congener Name and CAS Number

| Congener Name                   | BZ #   | CAS Number |
|---------------------------------|--------|------------|
| 2,4'-Dichlorobiphenyl           | BZ#8   | 34883-43-7 |
| 2,2',5'-Trichlorobiphenyl       | BZ#18  | 37680-65-2 |
| 2,4,4'-Trichlorobiphenyl        | BZ#28  | 7012-37-5  |
| 2,2',3,5'-Tetrachlorobiphenyl   | BZ#44  | 41464-39-5 |
| 2,2',5,5'-Tetrachlorobiphenyl   | BZ#52  | 35693-99-3 |
| 2,3',4,4'-Tetrachlorobiphenyl   | BZ#66  | 32598-10-0 |
| 2,2',4,5,5'-Pentachlorobiphenyl | BZ#101 | 37680-73-2 |
| 2,3,3',4,4'-Pentachlorobiphenyl | BZ#105 | 32598-14-4 |
| 2,3',4,4',5-Pentachlorobiphenyl | BZ#118 | 31508-00-6 |

| Congener Name                            | BZ #   | CAS Number |
|--|--------|------------|
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | BZ#128 | 38380-07-3 |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | BZ#138 | 35065-28-2 |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | BZ#153 | 35065-27-1 |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | BZ#170 | 35065-30-6 |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | BZ#180 | 35065-29-3 |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | BZ#187 | 52663-68-0 |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | BZ#195 | 52663-78-2 |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | BZ#206 | 40186-72-9 |
| Decachlorobiphenyl                       | BZ#209 | 52663-77-1 |

Date: ~~4/5/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

Lab: Alpha Analytical

Date Sampled: 9/25/09 through 9/28/09

Analysis: Total Organic Carbon (TOC) by modified EPA SW-846 Method 9060

| QC Met Criteria? | Preservation<br>4 ± 2°C | HT<br>28 days | RL<br>0.01%<br>(100 mg/Kg) | MB<br>< RL | Solid LCS =<br>SRM<br>75-125% R | MS<br>75-125% R | MD<br>RPD ≤ 25% | FD<br>RPD ≤ 50% | % Solids<br>> 30% | Other  |
|------------------|-------------------------|---------------|----------------------------|------------|---------------------------------|-----------------|-----------------|-----------------|-------------------|--|
| Yes              | √                       | √             | √                          | √          | √                               | √               | √               | √               | √                 |  |
| No               |                         |               |                            |            |                                 |                 |                 |                 |                   | Estimate (J)<br>505125,<br>505825, &<br>506325 |

Calibration criteria: Unless otherwise noted in the laboratory narrative, it was assumed that all initial and continuing calibration verifications (ICV/CCV) and initial and continuing calibration blank (ICB/CCB) results were acceptable (met LTM V QAPP 2009 requirements). In addition, RPD < 25% for two replicates of each sample.

- Method Modification: Laboratory analyzed two replicates (burns) for TOC by Method 9060A rather than 4 (as in the method); this is consistent with LTMV QAPP requirements.

Samples were received intact. TOC analysis was performed on the samples "as-received" (i.e., not on "air-dried" sediments). Samples were frozen upon receipt to arrest holding time. Therefore, analyses, conducted on 10/29/09, were considered to have met HT criteria. No Action required.

MS/MD site sample used for QC: 505625. Duplicate burns of MS resulted in acceptable recovery and duplicate burns of sample/MD also gave RPD < 25%. Acceptable precision - No action required.

Sample/FD site sample IDs: 506425 & 508235. FD precision, based on average value for TOC for each sample, was RPD = 24.2%; therefore, FD precision was acceptable - No Action required.

Replicate (duplicate) precision TOC results of each sample all had RPD < 25% except 505125 (values reported for duplicate runs RPD = 26.9%); 505825 (values reported for duplicate runs RPD = 28.0%); and 506325 (values reported for duplicate runs RPD = 26.9%) - all replicates acceptable except for 505125, 505825, & 506325.

*\*ACTION: Replicate TOC results for samples 505125, 505825, and 506325 estimated (J) with Indeterminate bias due to Replicate Imprecision.*

Data users should compute the arithmetic average of the two TOC replicate burns for each sample and use this average as the valid TOC result for that sample.

**Data Package Completeness:**

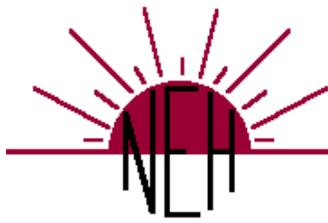
- Were all required forms (results, summary QC, COC), as required to validate the data in accordance with EPA Region 1 present in the data package? **Yes**
- Were all result forms for all samples listed on the chain-of-custody present in data package? **Yes**

If No, explain and request resubmittals:

Date: 7/17/10  
 Data Reviewer: \_\_\_\_\_

Nancy C. Rothman, Ph.D.





**Data Validation Report**  
**EPA Region I Tier I+**  
**18 NOAA PCB Congeners by 8270C and TOC by Method 9060**

**Client/Company:** Woods Hole Group, Inc. (WHG)

**Site/Project Name:** New Bedford Harbor Superfund Site – Long Term Monitoring (LTM) V

**Laboratory:** Alpha Analytical – Mansfield, MA

**Lab Project Number(s):** L0912900

**Date(s) of Collection:** September 25, 2009 through September 28, 2009

**Number / Type  
Samples & Analyses** 17 sediment samples for 18 NOAA PCB Congeners by EPA SW-846  
Method 8270C and Total Organic Carbon (TOC) by Method 9060

**Senior Data Reviewers:** Nancy C. Rothman, PhD, New Environmental Horizons, Inc.  
Susan D. Chapnick, New Environmental Horizons, Inc.

**Date Completed:** April 6, 2010  
**Revised:** *April 12, 2010*

*This report was revised to include the Tier I+ review of TOC data.*

This EPA Region I Tier I+ validation for 18 NOAA PCB Congeners and TOC was performed with the following intentions: 1) to determine if the data were generated and reported in accordance with the *Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, MA*, prepared by Woods Hole Group, Inc., September 2009 (LTMV QAPP); Region I, *EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses*, December 1996, including *Part III – Pesticide/PCB Data Validation Functional Guidelines*, Draft February 2004; 2) to determine if the data met project data quality objectives for acceptable accuracy, precision, sensitivity; and technical usability; and 3) to generate an electronic deliverable of validated results with project-specific data validation qualifiers added.

The Data Validation Report consists of three parts:

- This Data Validation Report letter summarizing the actions taken;
- The database file of validated sample results with validation qualifiers, bias, and comments added based on actions taken; and
- Data Validation Checklists for TOC and PCB Congeners including the Surrogate Recovery Correction worksheet completed during this validation to document the Tier I+ review. The Checklists are an integral part of the DV Report as they contain comprehensive details of all quality control (QC) reviewed, the acceptance criteria used, and the professional judgment and actions taken.

## I. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification analytical parameters reviewed and the sample type (e.g., field sample, field duplicate (FD), field equipment blank (EB), as applicable), are listed below in Table 1.

Table 1. Sample Descriptions and Analytical Parameters Validated

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type  |
|-----------|---------------|-----------------|----------|------------------------------------|--------------|
| 504925    | L0912900-01   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505025    | L0912900-02   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505125    | L0912900-03   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505225    | L0912900-04   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505325    | L0912900-05   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505425    | L0912900-06   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505525    | L0912900-07   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505625    | L0912900-08   | 9/27/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505725    | L0912900-09   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505825    | L0912900-10   | 9/28/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 505925    | L0912900-11   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |

Table 1. Sample Descriptions and Analytical Parameters Validated - continued

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type               |
|-----------|---------------|-----------------|----------|------------------------------------|---------------------------|
| 506025    | L0912900-12   | 9/28/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 506125    | L0912900-13   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 506225    | L0912900-14   | 9/28/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 506325    | L0912900-15   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 506425    | L0912900-16   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample              |
| 508235    | L0912900-17   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Duplicate of 506425 |

Analytical method references:

18 NOAA Congeners: *Determination of PCB Homologs, Individual Congeners, and Pesticides by Gas Chromatography/Mass Spectrometry in the Select Ion Monitoring (SIM) Mode (EPA 680 & 8270C)*, Alpha SOP O-015, Rev. 2, June 19, 2006.

TOC: SW-846 Method 9060 modified, Alpha SOP W-028

<sup>1</sup> Grain Size analysis was also performed on these samples; however, data validation for this parameter was not required. TOC analysis was performed on “as-received” sediments while the 18 NOAA Congeners were performed using “air-dried” sediments.

## II. Data Validation Report Summary

This Data Validation Report represents a Tier I+ validation of the 18 NOAA PCB Congener and TOC sample results and summary QC (method and matrix), which were used to evaluate accuracy, precision, and sensitivity compared to the NBH LTMV QAPP requirements.

The following QC elements, as applicable to the analytical methods, were reviewed:

- Data package completeness and reporting protocols
- Sample receipt, holding times and preservation criteria
- Blank results including Method Blanks, Equipment Blanks, & Trip blanks
- Laboratory Control Sample (LCS) recoveries / LCS Duplicate Recoveries
- Standard Reference Material (SRM) Recoveries
- Surrogate Recoveries
- Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Recoveries
- MS/MSD, LCS/LCSD, sample/Laboratory Duplicate (LD), or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)

- Sample result reporting (including compound lists, reporting limits, and units)
- Calibration criteria\* (including tune criteria, initial calibration and continuing calibration verification)
- Internal Standard (IS) Recoveries\*
- Retention Time windows\*
- Other method-specific QC if applicable and reported\* (e.g., serial dilution results for metals)
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

\* This QC element is reviewed associated with the Tier II-type validation only. For Tier I+ validations this QC element is assumed to be acceptable unless otherwise noted in the laboratory narrative.

Based on this Tier I+ validation of the 18 NOAA PCB Congeners and TOC, all results were considered usable for project decisions based on a comparison to the NBH LTMV QAPP requirements and with the understanding of the potential uncertainty (bias) in the qualified results summarized in Table 2. NEH generated electronic validated results based on the project database file received from WHG for these data, by updating the following database fields for field samples and field QC only: VALID\_QUAL, VALIDATION\_LEVEL, VALIDATION, VALID\_DATE, BIAS, and DV\_COMMENT.

The remainder of this report documents “exceptions” to the NBH LTMV QAPP criteria or clarifications of data reported. QC elements not discussed below met all QAPP criteria. The full documentation of all QC elements reviewed during the Tier I+ validation are presented in the attached Data Validation Checklists.

### **Sample Receipt and Holding Time**

The sediment samples were received at the laboratory intact in six shipments at 1.6°C to 3.5°C. Aliquots of the “as-received” samples were analyzed for TOC, Grain Size, and percent solids. Samples were frozen upon receipt to arrest holding time for TOC analysis. All samples had percent solids content of 33-82%; therefore, these sediment samples were air-dried, as required by the QAPP, prior to Congener analysis. After air-drying, the percent solids content for all samples was greater than 82%.

### **Accuracy**

The Method Blank was non-detect for TOC; therefore, blank action was not required.

The Method Blank reported detected results for several Congeners. Comparisons of the levels reported in the method blank with the levels reported in the samples were made and the blank actions to negate sample data were applied after surrogate-recovery correction. Blank actions taken are described in the Data Validation Checklist and listed in Table 2.

There was no Equipment Blank required to be collected along with these sediment samples.

Surrogate recovery did not meet criteria for three samples: 505025, 505325, and 505625. One of the two surrogates was recovered high compared to criteria in all three samples. For these samples, the detected results were surrogate-recovery corrected, as required by the LTMV QAPP, using only the one surrogate in each sample that was recovered within criteria. As a consequence of performing this recovery correction calculation, the impact of the surrogates outside criteria on the sample data is uncertain; therefore, all detected results in these three samples were estimated (J) due to conflicting surrogate recovery results.

All 18 NOAA Congeners recovered within criteria in the LCS and LCSD except for 2,3,3',4,4'-Pentachlorobiphenyl (BZ#105), which was recovered high in the LCS. Since the LCSD recovery and RPD between the LCS and LCSD were acceptable for this Congener, no action to qualify sample data was taken based on professional judgment.

Congener recoveries in the MS/MSD analysis conducted on sample 505625 were acceptable for three Congeners that had spike levels appropriate to the sample concentrations. For the remainder of the Congeners, the spike level was too low compared to the concentration of PCB Congeners in the field sample to evaluate recovery. No action was taken based on the MS/MSD recoveries. TOC recovery in the MS analysis of sample 505625 was acceptable; indicating acceptable accuracy for TOC in the site matrix.

The Standard Reference Material (SRM NY/NJ Waterway Sediment) reported acceptable recovery for all Congeners certified in this SRM except 2,2',3,3',4,4'-Hexachlorobiphenyl (BZ#128) and 2,2',3,3',4,4',5,6-Octachlorobiphenyl (BZ#195), which were recovered outside criteria. Since the LCS/LCSD recoveries for these Congeners were within criteria, no action to qualify sample data was taken based on professional judgment. The TOC SRM reported acceptable recoveries for TOC certified in this SRM.

### **Precision**

LCS/LCSD precision was acceptable for all 18 NOAA Congeners; therefore, no action was required.

MS/MSD precision in the analysis of sample 505625 was acceptable for all 18 NOAA Congeners except for 2,2',4,4',5,5'-Hexachlorobiphenyl (BZ#153), 2,2',3,4,4',5,5'-Heptachlorobiphenyl (BZ#180), and 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl (BZ#206). The results for these three Congeners were estimated (J and UJ) in the unspiked sample with indeterminate bias due to the observed imprecision. Sample/MD precision for TOC analysis of 505625 was acceptable.

All TOC analyses were performed in replicate (duplicate burns), as a method modification consistent with the site QAPP requirements. Precision between all replicates of TOC reported for each sample was acceptable for all samples except 505125, 505825, and 506325. Replicate precision was not met for the duplicate burns of these three samples; therefore, the replicate values for TOC for 505125, 505825, and 506325 were estimated (J) with indeterminate bias due to the observed imprecision.

Field Duplicate (FD) precision was unacceptable for 11 of the 18 NOAA Congeners in the FD pair of 506425 and 508235. The results for 11 Congeners in these samples were estimated (J) with indeterminate bias, as shown in Table 2, due to the observed imprecision. Precision for TOC was acceptable in this FD pair. These results are an indication of generally unacceptable precision and

representativeness of these sediment samples to the site location for PCB Congeners but acceptable precision and representativeness of these sediment samples to the site location for TOC.

### **Sensitivity & Reporting**

All samples met sensitivity requirements for PCB Congeners and TOC as indicated in NBH LTMV QAPP Table 1-3.

Data users should compute the average of the TOC replicate results (duplicate burns) for each sample and use this arithmetic average as the valid result for TOC.

An investigation by NEH into previous reporting of LTM data by Battelle indicated that Congener data were surrogate-recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate-recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting previous LTM data (LTMIV and prior monitoring data), Alpha's process for reporting LTMV results, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events reported by Battelle.

For Congener samples where the surrogates are not recovered because of analytical dilutions or when results were non-detect, the DV\_COMMENT "K2" was added to the validated database file to indicate that the reported value was not surrogate-recovery corrected.

For Congener samples where surrogate-recovery correction was performed, a separate Surrogate Recovery Correction excel worksheet was constructed (as part of the Data Validation Checklist process) showing the original lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. For surrogate-corrected results, the project database file was updated as follows:

1. The surrogate-corrected value, as shown in the Surrogate Recovery Correction worksheet, replaced the lab RESULT value in the validated database file;
2. The qualifier "K" was added to the VALID\_QUAL field to identify the result as surrogate-recovery corrected; and
3. "K1" was added to the DV\_COMMENT field as the DV code to further indicate that the reported result was surrogate-recovery corrected.

Non-detects for Congeners were reported by Alpha at the Reporting Limit (RL), consistent with the LTMV QAPP requirements. Since non-detected results are not comparable between Alpha and Battelle because the basis for the non-detects are different (RL vs. MDL), non-detects and reporting limits were not surrogate-recovery corrected in the LTMV data.

For this SDG, all Congener samples reported surrogate recoveries. For samples 505025, 505325, and 505625, one of the two surrogates was not recovered within criteria; therefore, the other surrogate, recovered within criteria, was used for correction of all detected Congener results. Surrogate-recovery correction was performed for all samples as documented in *Surrogate Recovery Correction\_L0912900*. Actions taken are listed below in Table 2.

Results reported below the sample-specific RLs are considered uncertain because they are below the calibration range. During this review, data below the sample-specific RLs were qualified as estimated (J), as shown in Table 2, and as described in the Data Validation Checklist.

The laboratory reported all results from DF > 1 analyses with a “D” qualifier. At Battelle’s request, these “D” qualifiers were maintained during the DV process.

Table 2. Summary of Data Validation Actions

| Field Sample ID  | Analyte   | Qualifier | Bias | Validation Comments  |
|--|---|-----------|------|--|
| 505125, 505825, & 506325   | Total Organic Carbon  | J         | I    | Replicate imprecision  |
| 504925, 505225, 505425, 505525, 505725, 505925, 506025, & 506225 | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue  | DK / K    |      | Reported value is surrogate recovery corrected   |
| 504925, 505225, 505425, 505525, 505725, 505925, 506025, & 506225 | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue   | DU/ U     |      | Reported value is not surrogate recovery corrected   |
| 505025 & 505325  | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue  | KJ / DKJ  | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery                      |
| 505025 & 505325  | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue   | U / DU    |      | Reported value is not surrogate recovery corrected   |
| 505125   | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl  | DK        |      | Reported value is surrogate recovery corrected   |
| 505125   | 2,2',3,3',4,4',5,6-Octachlorobiphenyl   | DU        |      | Reported value is not surrogate recovery corrected   |
| 505625   | All Congeners except:<br>2,2',4,4',5,5'-Hexachlorobiphenyl,<br>2,2',3,4,4',5,5'-Heptachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue | DKJ       | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery                      |
| 505625   | 2,2',4,4',5,5'-Hexachlorobiphenyl &<br>2,2',3,4,4',5,5'-Heptachlorobiphenyl   | DKJ       | I    | Reported value is surrogate recovery corrected + Conflicting surrogate recovery + MS/MSD imprecision |

Table 2. Summary of Data Validation Actions - continued

| Field Sample ID | Analyte  | Qualifier | Bias | Validation Comments   |
|-----------------|--|-----------|------|---|
| 505625          | 2,2',3,3',4,4',5,6-Octachlorobiphenyl & Decachlorobiphenyl - Homologue   | DU        |      | Reported value is not surrogate recovery corrected                                  |
| 505625          | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl   | DUJ       | I    | Reported value is not surrogate recovery corrected + MS/MSD imprecision             |
| 506125          | All Congeners except:<br>2,2',5-Trichlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, & Decachlorobiphenyl - Homologue   | K         |      | Reported value is surrogate recovery corrected                                      |
| 506125          | 2,2',5-Trichlorobiphenyl   | UK        |      | Reported value is surrogate recovery corrected + Result Negated due to Blank Action |
| 506125          | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl, & Decachlorobiphenyl - Homologue   | U         |      | Reported value is not surrogate recovery corrected                                  |
| 505825          | 2,3,3',4,4'-Pentachlorobiphenyl,<br>2,2',3,3',4,4'-Hexachlorobiphenyl,<br>2,2',3,3',4,4',5-Heptachlorobiphenyl,<br>2,2',3,4,4',5,5'-Heptachlorobiphenyl,<br>2,2',3,4',5,5',6-Heptachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl,<br>& Decachlorobiphenyl - Homologue | U         |      | Reported value is not surrogate recovery corrected                                  |
| 505825          | 2,2',4,5,5'-Pentachlorobiphenyl,<br>2,3',4,4',5-Pentachlorobiphenyl,<br>2,2',3,4,4',5'-Hexachlorobiphenyl, & 2,2',4,4',5,5'-Hexachlorobiphenyl   | K         |      | Reported value is surrogate recovery corrected                                      |
| 505825 & 506325 | 2,2',5-Trichlorobiphenyl,<br>2,4,4'-Trichlorobiphenyl,<br>2,2',3,5'-Tetrachlorobiphenyl, & 2,2',5,5'-Tetrachlorobiphenyl   | UK        |      | Reported value is surrogate recovery corrected + Result Negated due to Blank Action |

Table 2. Summary of Data Validation Actions - continued

| Field Sample ID | Analyte   | Qualifier | Bias | Validation Comments   |
|-----------------|---|-----------|------|---|
| 505825          | 2,4'-Dichlorobiphenyl &<br>2,3',4,4'-Tetrachlorobiphenyl  | JK        | I    | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 506325          | 2,3,3',4,4'-Pentachlorobiphenyl &<br>2,2',3,4',5,5',6-Heptachlorobiphenyl   | JK        | I    | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 506325          | 2,2',3,3',4,4'-Hexachlorobiphenyl,<br>2,2',3,3',4,4',5-Heptachlorobiphenyl,<br>2,2',3,4,4',5,5'-Heptachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl,<br>& Decachlorobiphenyl – Homologue   | U         |      | Reported value is not surrogate recovery corrected  |
| 506325          | 2,4'-Dichlorobiphenyl,<br>2,3',4,4'-Tetrachlorobiphenyl,<br>2,2',4,5,5'-Pentachlorobiphenyl,<br>2,3',4,4',5-Pentachlorobiphenyl,<br>2,2',3,4,4',5'-Hexachlorobiphenyl, &<br>2,2',4,4',5,5'-Hexachlorobiphenyl   | K         |      | Reported value is surrogate recovery corrected  |
| 506425 & 508235 | 2,3',4,4'-Tetrachlorobiphenyl,<br>2,2',3,3',4,4'-Hexachlorobiphenyl,<br>2,2',4,4',5,5'-Hexachlorobiphenyl, &<br>2,2',3,3',4,4',5-Heptachlorobiphenyl  | K         |      | Reported value is surrogate recovery corrected  |
| 506425 & 508235 | 2,4'-Dichlorobiphenyl,<br>2,2',5-Trichlorobiphenyl,<br>2,4,4'-Trichlorobiphenyl,<br>2,2',3,5'-Tetrachlorobiphenyl,<br>2,2',5,5'-Tetrachlorobiphenyl,<br>2,2',4,5,5'-Pentachlorobiphenyl,<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,3',4,4',5-Pentachlorobiphenyl,<br>2,2',3,4,4',5'-Hexachlorobiphenyl,<br>2,2',3,4,4',5,5'-Heptachlorobiphenyl, &<br>2,2',3,4',5,5',6-Heptachlorobiphenyl | KJ        | I    | Reported value is surrogate recovery corrected + FD imprecision                               |

Table 2. Summary of Data Validation Actions - continued

| <b>Field Sample ID</b> | <b>Analyte</b>  | <b>Qualifier</b> | <b>Bias</b> | <b>Validation Comments</b>                               |
|------------------------|---|------------------|-------------|--|
| 506425 & 508235        | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-<br>Nonachlorobiphenyl, &<br>Decachlorobiphenyl - Homologue | U                |             | Reported value is not<br>surrogate recovery<br>corrected |

*Qualifiers: U = Analyte is non-detect at or above the sample-specific reporting limit (RL); UJ = Non-detect is estimated at the RL; J = Result is estimated; EB = analyte detected in associated equipment blank; EMPC = estimated maximum possible concentration (PCB congeners only); R = Result is rejected and is unusable for project decisions; D = result reported from a dilution analysis (added by laboratory); K = Result is Surrogate Recovery Corrected.*

*Bias: L = Low; H = High; I = Indeterminate*

*Abbreviations used in Table 2:*

*FD = Field Duplicate*

*MS = Matrix Spike*

*MSD = Matrix Spike Duplicate*

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 504925  | 5        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 39.9       | D        | 55.4                        | UG/KG       |
| 504925  | 5        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 164        | D        | 228                         | UG/KG       |
| 504925  | 5        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 568        | D        | 789                         | UG/KG       |
| 504925  | 5        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 430        | D        | 597                         | UG/KG       |
| 504925  | 5        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 768        | D        | 1067                        | UG/KG       |
| 504925  | 5        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 72.8       | D        | 101                         | UG/KG       |
| 504925  | 5        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 439        | D        | 610                         | UG/KG       |
| 504925  | 5        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 134        | D        | 126                         | UG/KG       |
| 504925  | 5        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 372        | D        | 351                         | UG/KG       |
| 504925  | 5        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 99.7       | D        | 94.1                        | UG/KG       |
| 504925  | 5        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 421        | D        | 397                         | UG/KG       |
| 504925  | 5        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 195        | D        | 184                         | UG/KG       |
| 504925  | 5        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 48.6       | D        | 45.8                        | UG/KG       |
| 504925  | 5        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 54.6       | D        | 51.5                        | UG/KG       |
| 504925  | 5        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 36.8       | D        | 34.7                        | UG/KG       |
| 504925  | 5        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 2.02       | DU       | NA                          | UG/KG       |
| 504925  | 5        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 2.02       | DU       | NA                          | UG/KG       |
| 504925  | 5        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 2.02       | DU       | NA                          | UG/KG       |
| 504925  | 5        | CS-10386-84-2 | Dbob   |     |                               | 72         | D        |                             | PCT_RE<br>C |
| 504925  | 5        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 106        | D        |                             | PCT_RE<br>C |
| 505025  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 11.4       |          | 13.7                        | UG/KG       |
| 505025  | 1        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 37.6       |          | 45.3                        | UG/KG       |
| 505025  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 138        |          | 166                         | UG/KG       |
| 505025  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 45.6       |          | 54.9                        | UG/KG       |
| 505025  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 118        |          | 142                         | UG/KG       |
| 505025  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 22.2       |          | 26.7                        | UG/KG       |
| 505025  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 102        |          | 123                         | UG/KG       |
| 505025  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 29.6       |          | 35.7                        | UG/KG       |
| 505025  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 102        |          | 123                         | UG/KG       |
| 505025  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 21         |          | 25.3                        | UG/KG       |
| 505025  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 89.8       |          | 108                         | UG/KG       |
| 505025  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 49.3       |          | 59.4                        | UG/KG       |
| 505025  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 12.9       |          | 15.5                        | UG/KG       |
| 505025  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 11.7       |          | 14.1                        | UG/KG       |
| 505025  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 9.29       |          | 11.2                        | UG/KG       |
| 505025  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 0.341      | U        | NA                          | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 505025  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 0.341      | U        | NA                          | UG/KG       |
| 505025  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 0.341      | U        | NA                          | UG/KG       |
| 505025  | 1        | CS-10386-84-2 | Dbob   |     |                               | 83         |          |                             | PCT_RE<br>C |
| 505025  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 146        |          |                             | PCT_RE<br>C |
| 505125  | 2        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 25.9       | D        | 33.2                        | UG/KG       |
| 505125  | 2        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 83.2       | D        | 107                         | UG/KG       |
| 505125  | 2        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 302        | D        | 387                         | UG/KG       |
| 505125  | 2        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 91.7       | D        | 118                         | UG/KG       |
| 505125  | 2        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 219        | D        | 281                         | UG/KG       |
| 505125  | 2        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 45.1       | D        | 57.8                        | UG/KG       |
| 505125  | 2        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 187        | D        | 240                         | UG/KG       |
| 505125  | 2        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 57         | D        | 46.7                        | UG/KG       |
| 505125  | 2        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 181        | D        | 148                         | UG/KG       |
| 505125  | 2        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 33.9       | D        | 27.8                        | UG/KG       |
| 505125  | 2        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 153        | D        | 125                         | UG/KG       |
| 505125  | 2        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 77.2       | D        | 63.3                        | UG/KG       |
| 505125  | 2        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 20.4       | D        | 16.7                        | UG/KG       |
| 505125  | 2        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 16.3       | D        | 13.4                        | UG/KG       |
| 505125  | 2        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 16.8       | D        | 13.8                        | UG/KG       |
| 505125  | 2        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.68       | DU       | NA                          | UG/KG       |
| 505125  | 2        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 2.71       | D        | 3.17                        | UG/KG       |
| 505125  | 2        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.83       | D        | 0.20                        | UG/KG       |
| 505125  | 2        | CS-10386-84-2 | Dbob   |     |                               | 78         | D        |                             | PCT_RE<br>C |
| 505125  | 2        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 122        | D        |                             | PCT_RE<br>C |
| 505225  | 5        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 44.9       | D        | 61.5                        | UG/KG       |
| 505225  | 5        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 85.5       | D        | 117                         | UG/KG       |
| 505225  | 5        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 421        | D        | 577                         | UG/KG       |
| 505225  | 5        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 109        | D        | 149                         | UG/KG       |
| 505225  | 5        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 308        | D        | 422                         | UG/KG       |
| 505225  | 5        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 72.9       | D        | 99.9                        | UG/KG       |
| 505225  | 5        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 300        | D        | 411                         | UG/KG       |
| 505225  | 5        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 88         | D        | 73.3                        | UG/KG       |
| 505225  | 5        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 301        | D        | 251                         | UG/KG       |
| 505225  | 5        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 64.6       | D        | 53.8                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 505225  | 5        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 276        | D        | 230                         | UG/KG       |
| 505225  | 5        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 148        | D        | 123                         | UG/KG       |
| 505225  | 5        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 39.1       | D        | 32.6                        | UG/KG       |
| 505225  | 5        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 40.6       | D        | 33.8                        | UG/KG       |
| 505225  | 5        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 27.1       | D        | 22.6                        | UG/KG       |
| 505225  | 5        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 1.77       | DU       | NA                          | UG/KG       |
| 505225  | 5        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 1.77       | DU       | NA                          | UG/KG       |
| 505225  | 5        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 1.77       | DU       | NA                          | UG/KG       |
| 505225  | 5        | CS-10386-84-2 | Dbob   |     |                               | 73         | D        |                             | PCT_RE<br>C |
| 505225  | 5        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 120        | D        |                             | PCT_RE<br>C |
| 505325  | 5        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 63         | D        | 86.3                        | UG/KG       |
| 505325  | 5        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 92         | D        | 126                         | UG/KG       |
| 505325  | 5        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 487        | D        | 667                         | UG/KG       |
| 505325  | 5        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 102        | D        | 140                         | UG/KG       |
| 505325  | 5        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 316        | D        | 433                         | UG/KG       |
| 505325  | 5        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 76.5       | D        | 105                         | UG/KG       |
| 505325  | 5        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 236        | D        | 323                         | UG/KG       |
| 505325  | 5        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 69.1       | D        | 94.7                        | UG/KG       |
| 505325  | 5        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 264        | D        | 362                         | UG/KG       |
| 505325  | 5        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 50.9       | D        | 69.7                        | UG/KG       |
| 505325  | 5        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 209        | D        | 286                         | UG/KG       |
| 505325  | 5        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 131        | D        | 179                         | UG/KG       |
| 505325  | 5        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 29.3       | D        | 40.1                        | UG/KG       |
| 505325  | 5        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 34.1       | D        | 46.7                        | UG/KG       |
| 505325  | 5        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 27.6       | D        | 37.8                        | UG/KG       |
| 505325  | 5        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 1.76       | DU       | NA                          | UG/KG       |
| 505325  | 5        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 1.76       | DU       | NA                          | UG/KG       |
| 505325  | 5        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 1.76       | DU       | NA                          | UG/KG       |
| 505325  | 5        | CS-10386-84-2 | Dbob   |     |                               | 73         | D        |                             | PCT_RE<br>C |
| 505325  | 5        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 138        | D        |                             | PCT_RE<br>C |
| 505425  | 2        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 8.22       | D        | 12.1                        | UG/KG       |
| 505425  | 2        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 41.2       | D        | 60.6                        | UG/KG       |
| 505425  | 2        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 224        | D        | 329                         | UG/KG       |
| 505425  | 2        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 47.6       | D        | 70.0                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 505425  | 2        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 138        | D        | 203                         | UG/KG       |
| 505425  | 2        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 34.2       | D        | 50.3                        | UG/KG       |
| 505425  | 2        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 122        | D        | 179                         | UG/KG       |
| 505425  | 2        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 31.4       | D        | 37.4                        | UG/KG       |
| 505425  | 2        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 115        | D        | 137                         | UG/KG       |
| 505425  | 2        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 22.4       | D        | 26.7                        | UG/KG       |
| 505425  | 2        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 87.4       | D        | 104                         | UG/KG       |
| 505425  | 2        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 82.3       | D        | 98.0                        | UG/KG       |
| 505425  | 2        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 11         | D        | 13.1                        | UG/KG       |
| 505425  | 2        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 9.32       | D        | 11.1                        | UG/KG       |
| 505425  | 2        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 10.1       | D        | 12.0                        | UG/KG       |
| 505425  | 2        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.678      | DU       | NA                          | UG/KG       |
| 505425  | 2        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.678      | DU       | NA                          | UG/KG       |
| 505425  | 2        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.678      | DU       | NA                          | UG/KG       |
| 505425  | 2        | CS-10386-84-2 | Dbob   |     |                               | 68         | D        |                             | PCT_RE<br>C |
| 505425  | 2        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 84         | D        |                             | PCT_RE<br>C |
| 505525  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 6.43       |          | 8.04                        | UG/KG       |
| 505525  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 21.6       |          | 27.0                        | UG/KG       |
| 505525  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 111        |          | 139                         | UG/KG       |
| 505525  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 26.4       |          | 33.0                        | UG/KG       |
| 505525  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 70.7       |          | 88.4                        | UG/KG       |
| 505525  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 10.7       |          | 13.4                        | UG/KG       |
| 505525  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 57.4       |          | 71.8                        | UG/KG       |
| 505525  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 16         |          | 13.0                        | UG/KG       |
| 505525  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 55.5       |          | 45.1                        | UG/KG       |
| 505525  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 11.8       |          | 9.59                        | UG/KG       |
| 505525  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 48.8       |          | 39.7                        | UG/KG       |
| 505525  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 26.2       |          | 21.3                        | UG/KG       |
| 505525  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 6.61       |          | 5.37                        | UG/KG       |
| 505525  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 6.37       |          | 5.18                        | UG/KG       |
| 505525  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 5.28       |          | 4.29                        | UG/KG       |
| 505525  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.338      | U        | NA                          | UG/KG       |
| 505525  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.338      | U        | NA                          | UG/KG       |
| 505525  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.338      | U        | NA                          | UG/KG       |
| 505525  | 1        | CS-10386-84-2 | Dbob   |     |                               | 80         |          |                             | PCT_RE<br>C |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 505525  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 123        |          |                             | PCT_RE<br>C |
| 505625  | 5        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 128        | D        | 173                         | UG/KG       |
| 505625  | 5        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 228        | D        | 308                         | UG/KG       |
| 505625  | 5        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 822        | D        | 1111                        | UG/KG       |
| 505625  | 5        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 249        | D        | 336                         | UG/KG       |
| 505625  | 5        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 560        | D        | 757                         | UG/KG       |
| 505625  | 5        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 146        | D        | 197                         | UG/KG       |
| 505625  | 5        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 573        | D        | 774                         | UG/KG       |
| 505625  | 5        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | DBOB                          | 189        | D        | 255                         | UG/KG       |
| 505625  | 5        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | DBOB                          | 539        | D        | 728                         | UG/KG       |
| 505625  | 5        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | DBOB                          | 103        | D        | 139                         | UG/KG       |
| 505625  | 5        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | DBOB                          | 450        | D        | 608                         | UG/KG       |
| 505625  | 5        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | DBOB                          | 209        | D        | 282                         | UG/KG       |
| 505625  | 5        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | DBOB                          | 48.8       | D        | 65.9                        | UG/KG       |
| 505625  | 5        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | DBOB                          | 54.3       | D        | 73.4                        | UG/KG       |
| 505625  | 5        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | DBOB                          | 38.8       | D        | 52.4                        | UG/KG       |
| 505625  | 5        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | DBOB                          | 1.82       | DU       | NA                          | UG/KG       |
| 505625  | 5        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | DBOB                          | 1.82       | DU       | NA                          | UG/KG       |
| 505625  | 5        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | DBOB                          | 1.82       | DU       | NA                          | UG/KG       |
| 505625  | 5        | CS-10386-84-2 | Dbob   |     |                               | 74         | D        |                             | PCT_RE<br>C |
| 505625  | 5        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 140        | D        |                             | PCT_RE<br>C |
| 505725  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 40.7       |          | 50.2                        | UG/KG       |
| 505725  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 79.9       |          | 98.6                        | UG/KG       |
| 505725  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 163        |          | 201                         | UG/KG       |
| 505725  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 69.9       |          | 86.3                        | UG/KG       |
| 505725  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 172        |          | 212                         | UG/KG       |
| 505725  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 33.1       |          | 40.9                        | UG/KG       |
| 505725  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 112        |          | 138                         | UG/KG       |
| 505725  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 33.5       |          | 27.5                        | UG/KG       |
| 505725  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 117        |          | 95.9                        | UG/KG       |
| 505725  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 21.8       |          | 17.9                        | UG/KG       |
| 505725  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 90         |          | 73.8                        | UG/KG       |
| 505725  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 76.1       |          | 62.4                        | UG/KG       |
| 505725  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 11         |          | 9.02                        | UG/KG       |
| 505725  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 11         |          | 9.02                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 505725  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 9.03       |          | 7.40                        | UG/KG       |
| 505725  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.348      | U        | NA                          | UG/KG       |
| 505725  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.348      | U        | NA                          | UG/KG       |
| 505725  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.348      | U        | NA                          | UG/KG       |
| 505725  | 1        | CS-10386-84-2 | Dbob   |     |                               | 81         |          |                             | PCT_RE<br>C |
| 505725  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 122        |          |                             | PCT_RE<br>C |
| 505825  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 0.248      | J        | 0.322                       | UG/KG       |
| 505825  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 0.284      | J        | 0.369                       | UG/KG       |
| 505825  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 0.906      | B        | 1.18                        | UG/KG       |
| 505825  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 0.388      |          | 0.504                       | UG/KG       |
| 505825  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 0.877      | B        | 1.14                        | UG/KG       |
| 505825  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 0.176      | J        | 0.229                       | UG/KG       |
| 505825  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 0.554      |          | 0.719                       | UG/KG       |
| 505825  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 0.665      |          | 0.599                       | UG/KG       |
| 505825  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 0.502      |          | 0.452                       | UG/KG       |
| 505825  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 0.577      |          | 0.520                       | UG/KG       |
| 505825  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | 35065-29-3    | 2,2',3,4,4',5-Heptachlorobiphenyl                | 180 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 505825  | 1        | CS-10386-84-2 | Dbob   |     |                               | 77         |          |                             | PCT_RE<br>C |
| 505825  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 111        |          |                             | PCT_RE<br>C |
| 505925  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 5.84       |          | 8.59                        | UG/KG       |
| 505925  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 8.63       |          | 12.7                        | UG/KG       |
| 505925  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 34         |          | 50.0                        | UG/KG       |
| 505925  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 16.4       |          | 24.1                        | UG/KG       |
| 505925  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 27.1       |          | 39.9                        | UG/KG       |
| 505925  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 12.1       |          | 17.8                        | UG/KG       |
| 505925  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 35.5       |          | 52.2                        | UG/KG       |
| 505925  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 13.6       |          | 11.8                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 505925  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 44.8       |          | 39.0                        | UG/KG       |
| 505925  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 9.83       |          | 8.55                        | UG/KG       |
| 505925  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 37.3       |          | 32.4                        | UG/KG       |
| 505925  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 32.2       |          | 28.0                        | UG/KG       |
| 505925  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 3.03       |          | 2.63                        | UG/KG       |
| 505925  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 4.89       |          | 4.25                        | UG/KG       |
| 505925  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 3.47       |          | 3.02                        | UG/KG       |
| 505925  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.36       | U        | NA                          | UG/KG       |
| 505925  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.36       | U        | NA                          | UG/KG       |
| 505925  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.36       | U        | NA                          | UG/KG       |
| 505925  | 1        | CS-10386-84-2 | Dbob   |     |                               | 68         |          |                             | PCT_RE<br>C |
| 505925  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 115        |          |                             | PCT_RE<br>C |
| 506025  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 27         |          | 35.1                        | UG/KG       |
| 506025  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 29.2       |          | 37.9                        | UG/KG       |
| 506025  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 80.7       |          | 105                         | UG/KG       |
| 506025  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 37.1       |          | 48.2                        | UG/KG       |
| 506025  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 62.7       |          | 81.4                        | UG/KG       |
| 506025  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 15.9       |          | 20.6                        | UG/KG       |
| 506025  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 61.7       |          | 80.1                        | UG/KG       |
| 506025  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 23.3       |          | 18.5                        | UG/KG       |
| 506025  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 62.6       |          | 49.7                        | UG/KG       |
| 506025  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 13.8       |          | 11.0                        | UG/KG       |
| 506025  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 56.8       |          | 45.1                        | UG/KG       |
| 506025  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 37.6       |          | 29.8                        | UG/KG       |
| 506025  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 5.84       |          | 4.63                        | UG/KG       |
| 506025  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 6.54       |          | 5.19                        | UG/KG       |
| 506025  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 4.29       |          | 3.40                        | UG/KG       |
| 506025  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.334      | U        | NA                          | UG/KG       |
| 506025  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.334      | U        | NA                          | UG/KG       |
| 506025  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.334      | U        | NA                          | UG/KG       |
| 506025  | 1        | CS-10386-84-2 | Dbob   |     |                               | 77         |          |                             | PCT_RE<br>C |
| 506025  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 126        |          |                             | PCT_RE<br>C |
| 506125  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 1.04       |          | 1.41                        | UG/KG       |
| 506125  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 1.4        | B        | 1.89                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 506125  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 4.88       |          | 6.59                        | UG/KG       |
| 506125  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 2.02       |          | 2.73                        | UG/KG       |
| 506125  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 4.37       |          | 5.91                        | UG/KG       |
| 506125  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 1.45       |          | 1.96                        | UG/KG       |
| 506125  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 4.69       |          | 6.34                        | UG/KG       |
| 506125  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 1.41       |          | 1.24                        | UG/KG       |
| 506125  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 4.91       |          | 4.31                        | UG/KG       |
| 506125  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 1.19       |          | 1.04                        | UG/KG       |
| 506125  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 4.86       |          | 4.26                        | UG/KG       |
| 506125  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 4.44       |          | 3.89                        | UG/KG       |
| 506125  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.462      |          | 0.405                       | UG/KG       |
| 506125  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.501      |          | 0.439                       | UG/KG       |
| 506125  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.485      |          | 0.425                       | UG/KG       |
| 506125  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.33       | U        | NA                          | UG/KG       |
| 506125  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.33       | U        | NA                          | UG/KG       |
| 506125  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.33       | U        | NA                          | UG/KG       |
| 506125  | 1        | CS-10386-84-2 | Dbob   |     |                               | 74         |          |                             | PCT_RE<br>C |
| 506125  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 114        |          |                             | PCT_RE<br>C |
| 506225  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 20.4       |          | 27.2                        | UG/KG       |
| 506225  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 22         |          | 29.3                        | UG/KG       |
| 506225  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 84.8       |          | 113                         | UG/KG       |
| 506225  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 34         |          | 45.3                        | UG/KG       |
| 506225  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 71.9       |          | 95.9                        | UG/KG       |
| 506225  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 21.6       |          | 28.8                        | UG/KG       |
| 506225  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 86.5       |          | 115                         | UG/KG       |
| 506225  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 32         |          | 30.8                        | UG/KG       |
| 506225  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 94.9       |          | 91.3                        | UG/KG       |
| 506225  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 20.4       |          | 19.6                        | UG/KG       |
| 506225  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 86.1       |          | 82.8                        | UG/KG       |
| 506225  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 40.4       |          | 38.8                        | UG/KG       |
| 506225  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 6.62       |          | 6.37                        | UG/KG       |
| 506225  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 10.1       |          | 9.71                        | UG/KG       |
| 506225  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 6.65       |          | 6.39                        | UG/KG       |
| 506225  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.4        | U        | NA                          | UG/KG       |
| 506225  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.4        | U        | NA                          | UG/KG       |
| 506225  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.4        | U        | NA                          | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 506225  | 1        | CS-10386-84-2 | Dbob   |     |                               | 75         |          |                             | PCT_RE<br>C |
| 506225  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 104        |          |                             | PCT_RE<br>C |
| 506325  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 0.776      |          | 0.958                       | UG/KG       |
| 506325  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 1.4        | B        | 1.73                        | UG/KG       |
| 506325  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 2.66       | B        | 3.28                        | UG/KG       |
| 506325  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 0.399      |          | 0.493                       | UG/KG       |
| 506325  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 2.66       | B        | 3.28                        | UG/KG       |
| 506325  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 0.692      |          | 0.854                       | UG/KG       |
| 506325  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1.87       |          | 2.31                        | UG/KG       |
| 506325  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 0.31       | J        | 0.290                       | UG/KG       |
| 506325  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 1.71       |          | 1.60                        | UG/KG       |
| 506325  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 0.333      | U        | NA                          | UG/KG       |
| 506325  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 1.63       |          | 1.52                        | UG/KG       |
| 506325  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 1.83       |          | 1.71                        | UG/KG       |
| 506325  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.333      | U        | NA                          | UG/KG       |
| 506325  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.333      | U        | NA                          | UG/KG       |
| 506325  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.266      | J        | 0.249                       | UG/KG       |
| 506325  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.333      | U        | NA                          | UG/KG       |
| 506325  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.333      | U        | NA                          | UG/KG       |
| 506325  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.333      | U        | NA                          | UG/KG       |
| 506325  | 1        | CS-10386-84-2 | Dbob   |     |                               | 81         |          |                             | PCT_RE<br>C |
| 506325  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 107        |          |                             | PCT_RE<br>C |
| 506425  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 4.76       |          | 6.26                        | UG/KG       |
| 506425  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 5.94       |          | 7.82                        | UG/KG       |
| 506425  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 20         |          | 26.3                        | UG/KG       |
| 506425  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 9.26       |          | 12.2                        | UG/KG       |
| 506425  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 15         |          | 19.7                        | UG/KG       |
| 506425  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 7.05       |          | 9.28                        | UG/KG       |
| 506425  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 14.4       |          | 18.9                        | UG/KG       |
| 506425  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 7.32       |          | 6.91                        | UG/KG       |
| 506425  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 22.2       |          | 20.9                        | UG/KG       |
| 506425  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 5.36       |          | 5.06                        | UG/KG       |
| 506425  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 19.7       |          | 18.6                        | UG/KG       |
| 506425  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 13         |          | 12.3                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 506425  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 1.8        |          | 1.70                        | UG/KG       |
| 506425  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 2.22       |          | 2.09                        | UG/KG       |
| 506425  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 1.83       |          | 1.73                        | UG/KG       |
| 506425  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.347      | U        | NA                          | UG/KG       |
| 506425  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.347      | U        | NA                          | UG/KG       |
| 506425  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.347      | U        | NA                          | UG/KG       |
| 506425  | 1        | CS-10386-84-2 | Dbob   |     |                               | 76         |          |                             | PCT_RE<br>C |
| 506425  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 106        |          |                             | PCT_RE<br>C |
| 508235  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 10.7       |          | 13.5                        | UG/KG       |
| 508235  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 19.6       |          | 24.8                        | UG/KG       |
| 508235  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 59.2       |          | 74.9                        | UG/KG       |
| 508235  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 19.7       |          | 24.9                        | UG/KG       |
| 508235  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 40.8       |          | 51.6                        | UG/KG       |
| 508235  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 12         |          | 15.2                        | UG/KG       |
| 508235  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 37.2       |          | 47.1                        | UG/KG       |
| 508235  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 13.4       |          | 11.6                        | UG/KG       |
| 508235  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 43.1       |          | 37.2                        | UG/KG       |
| 508235  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 9.34       |          | 8.05                        | UG/KG       |
| 508235  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 39.8       |          | 34.3                        | UG/KG       |
| 508235  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 19.8       |          | 17.1                        | UG/KG       |
| 508235  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 2.43       |          | 2.09                        | UG/KG       |
| 508235  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 5.12       |          | 4.41                        | UG/KG       |
| 508235  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 3.59       |          | 3.09                        | UG/KG       |
| 508235  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.346      | U        | NA                          | UG/KG       |
| 508235  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.346      | U        | NA                          | UG/KG       |
| 508235  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.346      | U        | NA                          | UG/KG       |
| 508235  | 1        | CS-10386-84-2 | Dbob   |     |                               | 79         |          |                             | PCT_RE<br>C |
| 508235  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 116        |          |                             | PCT_RE<br>C |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912904

Lab: Alpha Analytical

Date Sampled: 9/22/09 through 9/26/09

Analysis: 18 NOAA PCB Congeners by GC/MS-SIM

No. Samples

15

Matrix:

Sediments

| Data Element | Preservation & HT | Surrogates %R 50-130% | LCS/LCSD                 | MS/MSD               | FD                         | MB                           | RL                                 | Issues with Qualifiers?                                       | Other  |
|--------------|-------------------|-----------------------|--------------------------|----------------------|----------------------------|------------------------------|------------------------------------|---|--|
|              |                   |                       | SRM %R 40-140% RPD ≤ 30% | %R 40-140% RPD ≤ 30% | RPD ≤ 30% SW RPD ≤ 50% SED | < RL or < 5x Conc. in sample | meets QAPP req. for matrix?        |   |  |
| Yes          | √                 | √                     | √                        | √                    | NA                         | √                            |                                    |   |  |
| No           |                   |                       |                          |                      |                            |                              | Estimate (J)<br>11 results<br>< RL | Data qualified "D" by the lab for all samples analyzed DF > 1 | Surrogate recovery correct all samples - see "Surrogate Recovery Correction _L0912904.pdf" and page 4 of this report for details |

**Did the Laboratory Narrative contain any issues which may affect data quality? Yes; however, all issues were reported in the summary data.**

**Were the %solids acceptable (>30%)? Yes all > 81% solids after air-drying. Prior to air-drying, % solids were 36-96%.**

*The data package consisted of a laboratory narrative, data sheets for samples, Method Blanks (MB), laboratory control samples (LCS), Matrix Spike/Matrix Spike Duplicates (MS/MSD), and the executed chain-of-custody. Summary information for initial and continuing calibrations were not present nor were raw data for samples and quality control (QC) reported. This Tier I+ review assumed that initial calibrations and qualitative and quantitative determination of the 18 NOAA Congeners were acceptable unless an issue was raised in the laboratory narrative.*

Comments:

Samples were received intact at 1.6C to 3.1C in 4 shipments on the day of or day after sample collection . COC seals were absent from coolers; however, these were picked up from the site by a courier and delivered directly to the lab.

Samples were analyzed for % solids, TOC, and Grain size. All samples were also air-dried and subsequently analyzed for %solids - air-dried and 18 NOAA Congeners

HT: Air-dried samples were extracted on 10/6/09 and analyzed by 11/12/09 - HT met - No action required.

Surrogates : both surrogates (DBOB and BZ198) were recovered within criteria in all samples. LCS reported DBOB below criteria - no action since no direct impact on samples

LCS: %Rec for LCS and LCSD were all within 40-140% for all 18 NOAA Congeners spiked. RPDs were all above criteria (RPD > 30%) though except for BZ105 since LCS recovery, as also shown by surrogate spikes were all low compare dot LCSD. Since the MS/MSD RPDs were all OK, decision made, based on professional judgment, to not qualify sample data for LCS RPDs since LCS recoveries all OK and MS/MSD RPDs OK.

Date: ~~4/8/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912904

Lab: Alpha Analytical

Blank Action:                      Blanks Reviewed: Method Blank  
No EB associated with samples

| Blank ID     | Contaminant / Level | Matrix Related? | Action Level / Action * | Sample and Reported Result | Corrected Result |
|--------------|---------------------|-----------------|-------------------------|----------------------------|------------------|
| Method Blank | None                | -               | -                       | No Blank Action required   |                  |
|              |                     |                 |                         |                            |                  |
|              |                     |                 |                         |                            |                  |
|              |                     |                 |                         |                            |                  |

Comments:  
*SRM*: NY/NJ Waterway Sediment. %Rec for Congeners in SRM were all within 40-140%, no action required.

*MS/MSD*: performed on sample 507125. Sample, MS and MSD were analyzed at DF=1. Spike level (7.9 µg/Kg) is appropriate to the matrix. %Rec OK for all 18 NOAA Congeners except BZ66 MS low (38%) - MSD and RPD OK and BZ52 MSD high (141%) - MS and RPD OK. Since the MS or MSD were acceptable and RPDs OK for these two Congeners, no Action taken.

*FD*: there were no FDs associated with the samples in this SDG. See FD precision in three other LTMV SDGs.

An investigation by NEH into previous reporting of LTM data by Battelle indicated that data were surrogate recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting, Alpha's process for reporting, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events.

For samples where the surrogates are not recovered because of the dilution made for analysis of the sample, a DV Comment was added to the validated database file "K2" to indicate that the reported value was not surrogate recovery corrected. For samples with surrogates recovered, a separate excel worksheet has been constructed (Surrogate Recovery Correction \_ L09XXXX.xls) showing the lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. Non-detects are reported by Alpha at the Reporting Limit (RL) consistent with the QAPP. Since non-detects will not be comparable between Alpha and Battelle because the basis for the non-detects are different (MDL vs. RL), non-detects and reporting limits are not surrogate recovery corrected in the LTMV data.

Date: ~~4/8/10~~  
Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist

Lab Project: L0912904

Lab: Alpha Analytical

Comments:

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All samples in this SDG reported surrogate recoveries. The surrogate corrected values, as shown in Surrogate Recovery Correction\_L0912904.pdf, replaced the Lab Result values in the validated database file, the data were qualified "K" to indicate this change to the Lab Result values, and a DV Comment was added, "K1", to indicate that the Reported result was recovery corrected.

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The lab reported results for 18 NOAA Congeners + 2 surrogates. All samples analyzed at DF=1 reported RLs for individual Congeners and PQLs below those requested in the QAPP; therefore, sensitivity was acceptable for these data. Samples with DF > 1 also met sensitivity requirements since the DF >1 was performed to ensure that all detects were reported within the instrument calibration range.

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The narrative did not raise any issues affecting quality that were not already addressed.

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11 results were reported at levels < RL and was flagged "J" by the lab. These 11 results were accepted with Indeterminate bias due to uncertainty in quantitation at a level below the instrument calibration range

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*Qualifiers* : All data were reported with "D" qualifiers to indicate results reported from a dilution analysis. As instructed by Battelle, these "D" qualifiers were not removed

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Date: ~~4/8/10~~  
Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
18 NOAA PCB Congeners Tier I+ Data Validation Checklist**

Lab Project: L0912904

Lab: Alpha Analytical

**ACTIONS:**

Preservation: Cooled to 4 ± 2°C. Sediments may be frozen for up to 1 year to preserve sample prior to extraction. If temperature outside criteria, use professional judgment.

HT: Extraction: waters -7d <HT< 14 d, J det/ J NDs; HT >14 d, J det/R ND

Extraction: sediment - 14d <HT< 28 d, J det/ J NDs; HT >28 d, J det/R ND (freezing arrests HT)

Analysis of extract: 40d < Extract HT < 60d, J det/ J NDs; Extract HT > 60d; J det/ R NDs

Surrogates: % Recovery > 130%, J det/Accept ND; 10% ≤ % Recovery < 50%, J det/J NDs; Recovery < 10%, J det/R NDs.

LCS/LCSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs. RPD > 30%, J det/UJ NDs.

MS/MSD: %Rec<10%, J det/ R NDs; 10% <%Rec<40%, J det/ J NDs; %Rec >140%, J det/Accept NDs- Unspiked Sample only. RPD > 30%, J det/UJ NDs.

FD: RPD > 30% (waters) or 50% (sediment) for results > 2 x RL, J det/UJ NDs. Use professional judgment for values < 2 x RL.

MBs: If contamination in blank(s) exists, Blank Action Level (BAL)= 5 x Level in Blank (on a sample-equivalent basis). If a sample result is < RL and < BAL, negate (U) result at RL; if value > RL but < BAL, negate (U) result at level reported; if value > BAL, no Action.

RLs: Verify RLs are sample-specific and meet PQL given in QAPP Addendum 2009 UFP - Worksheet #15. If result > upper calibration range, J result; if

Other Data qualified J by lab stays as J; data qualified E by lab becomes J; data qualified U by lab stays U; data qualified P by lab becomes J; data qualified B becomes

Qualifiers: either U or J based on actions taken for Method Blank (MB)

% solids: 10% < % solids < 30%, J det/R ND; % solids < 10%, R detects and NDs.

**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated

**Reference:** Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, Massachusetts, September 2009 and Region I, EPA-NE Pesticide/PCB Data Validation Functional Guidelines - Part III, Draft February 2004

Laboratory Data were reported using BZ# only - the following table shows a cross reference of BZ# to Congener Name and CAS Number

| Congener Name                   | BZ #   | CAS Number |
|---------------------------------|--------|------------|
| 2,4'-Dichlorobiphenyl           | BZ#8   | 34883-43-7 |
| 2,2',5'-Trichlorobiphenyl       | BZ#18  | 37680-65-2 |
| 2,4,4'-Trichlorobiphenyl        | BZ#28  | 7012-37-5  |
| 2,2',3,5'-Tetrachlorobiphenyl   | BZ#44  | 41464-39-5 |
| 2,2',5,5'-Tetrachlorobiphenyl   | BZ#52  | 35693-99-3 |
| 2,3',4,4'-Tetrachlorobiphenyl   | BZ#66  | 32598-10-0 |
| 2,2',4,5,5'-Pentachlorobiphenyl | BZ#101 | 37680-73-2 |
| 2,3,3',4,4'-Pentachlorobiphenyl | BZ#105 | 32598-14-4 |
| 2,3',4,4',5-Pentachlorobiphenyl | BZ#118 | 31508-00-6 |

| Congener Name                            | BZ #   | CAS Number |
|--|--------|------------|
| 2,2',3,3',4,4'-Hexachlorobiphenyl        | BZ#128 | 38380-07-3 |
| 2,2',3,4,4',5'-Hexachlorobiphenyl        | BZ#138 | 35065-28-2 |
| 2,2',4,4',5,5'-Hexachlorobiphenyl        | BZ#153 | 35065-27-1 |
| 2,2',3,3',4,4',5-Heptachlorobiphenyl     | BZ#170 | 35065-30-6 |
| 2,2',3,4,4',5,5'-Heptachlorobiphenyl     | BZ#180 | 35065-29-3 |
| 2,2',3,4',5,5',6-Heptachlorobiphenyl     | BZ#187 | 52663-68-0 |
| 2,2',3,3',4,4',5,6-Octachlorobiphenyl    | BZ#195 | 52663-78-2 |
| 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl | BZ#206 | 40186-72-9 |
| Decachlorobiphenyl                       | BZ#209 | 52663-77-1 |

Date: ~~4/8/10~~

Data Reviewer: ~~Nancy C. Rothman, Ph.D.~~

**New Bedford Harbor  
LTM V 2009**

Lab Project: L0912904

Lab: Alpha Analytical

**TOC Tier I+ Data Validation Checklist**

No. Samples

15

Date Sampled: 9/22/09 through 9/26/09

Matrix:

Sediment

Analysis: Total Organic Carbon (TOC) by modified EPA SW-846 Method 9060

| QC Met Criteria? | Preservation<br>4 ± 2°C | HT<br>28 days | RL<br>0.01%<br>(100 mg/Kg) | MB<br>< RL | Solid LCS =<br>SRM<br>75-125% R | MS<br>75-125% R | MD<br>RPD ≤ 25% | FD<br>RPD ≤ 50% | % Solids<br>> 30% | Other |
|------------------|-------------------------|---------------|----------------------------|------------|---------------------------------|-----------------|-----------------|-----------------|-------------------|-------|
| <b>Yes</b>       | √                       | √             | √                          | √          | √                               | √               | √               | NA              | √                 |       |
| <b>No</b>        |                         |               |                            |            |                                 |                 |                 |                 |                   |       |

Calibration criteria: Unless otherwise noted in the laboratory narrative, it was assumed that all initial and continuing calibration verifications (ICV/CCV) and initial and continuing calibration blank (ICB/CCB) results were acceptable (met LTM V QAPP 2009 requirements).

▪ Method Modification: Laboratory analyzed two replicates (burns) for TOC by Method 9060A rather than 4 (as in the method); this is consistent with LTMV QAPP requirements.

Samples were received intact. TOC analysis was performed on the samples "as-received" (i.e., not on "air-dried" sediments). Samples were frozen upon receipt to arrest holding time. Therefore, analyses, conducted on 10/29/09, were considered to have met HT criteria. No Action required.

MS/MD site sample used for QC: 507125. One replicate of the MS was high outside criteria at 127% recovery but the other replicate MS was acceptable at 105%. No action taken based on professional judgment because the average MS recovery for this sample met criteria at 116% recovery and the SRM % Rec was acceptable, indicating acceptable accuracy for the TOC method in the sediment matrix.

Sample/FD site sample IDs: There were no FDs associated with the samples in this SDG - see other LTMV SDGs for FDs

Replicate (duplicate) precision between sample/MD and the replicate TOC results of each sample all had RPD < 25% - all replicates acceptable - No Action.

Data users should compute the arithmetic average of the two TOC replicate burns for each sample and use this average as the valid TOC result for that sample.

**Data Package Completeness:**

1. Were all required forms (results, summary QC, COC), as required to validate the data in accordance with EPA Region 1 present in the data package? **Yes**
2. Were all result forms for all samples listed on the chain-of-custody present in data package? **Yes**

If No, explain and request resubmittals:

Date: 7/9/10  
Data Reviewer:

Nancy C. Rothman, Ph.D.

Lab: Alpha Analytical

TOC Tier I+ Data Validation Checklist

**Data Quality / Usability Issues:**

1. Did the Laboratory Narrative contain any issues which may affect data quality or usability that have not been already addressed on page 1? **No.**  
If Yes, explain.

2. Explain further any actions taken based on summary QC, as necessary, below.

No further actions required.

**All TOC data were accepted as reported by the laboratory and unchanged as a consequence of this data validation review.**

**QC Actions:**

Pres./HT: HT exceedance: J detects; Non-detects: R or UJ based on professional judgment. Freezing arrests HT.  
Temperature: outside control limits of  $4 \pm 2^\circ\text{C}$ : use professional judgment.

Blanks: Method Blanks and instrument blanks: TOC < RL unless all sample results are > 10 blank level. Detected results < matrix-matched blank level report as "U" (non-detected at level found). Professional judgment used for non-matrix matched blanks (e.g. aqueous blank associated with sediment samples).

Calibration Criteria: Assume acceptable unless narrated. Exceedances of any calibration criteria will affect accuracy of the data: J detects and UJ non-detects. Severe exceedances of calibration criteria, to be determined based on professional judgment, may require rejection, R, of data.

ICV/CCV: Assume acceptable unless narrated. If narrated as exceeded: %Recoveries < lower control limit: J / UJ. %Recoveries > upper control limit: J detects.  
If severe exceedance <50% recovery: R non-detects.

LCS/SRM: %Recoveries < lower control limit: J / UJ. %Recoveries > upper control limit: J detects. %Recoveries < 50%, may R non-detects & J detects but use professional judgment to accept results if MS is in-control indicating acceptable accuracy in sample matrix.

MS: %Recoveries < lower control limit: J / UJ. %Recoveries > upper control limit: J detects. %Recoveries < 30%, may R non-detects & J detects but use professional judgment if sample concentration > 2x spike level.

MD: Results > 5xRL: RPD >25%: J / UJ associated results in batch - to be determined using professional judgment.  
Results < 5xRL: difference >  $\pm 2xRL$ , J / UJ associated results in batch - to be determined using professional judgment.

FD: Results > 5xRL: RPD >50%: J / UJ FD results only. Results < 5xRL: difference >  $\pm 4xRL$ , J/UJ FD results only.

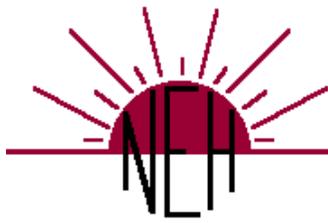
% Solids: 10% < % solids < 30%, J detects/R non-detects; % solids < 10%, R all results.

**Qualifiers:** U = analyte is non-detect at the sample-specific Reporting Limit (RL) (usable); UJ = non-detect is usable as an estimated value; J = result is usable as an estimated value; R = result is rejected due to severe QC exceedance and unusable for project objectives. Bias: L = Low; H = High; I = Indeterminate. QC Limits based on EPA Region 1 Inorganic DV guidance and LTM V QAPP 2009.

**References:** Quality Assurance Project Plan; New Bedford Harbor Long Term Monitoring V; New Bedford, Massachusetts (September 2009); Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, December 1996; USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review; Publication EPA 540-R-04-004, October 2004.

Date: 7/9/10  
Data Reviewer:

Nancy C. Rothman, Ph.D.



**Data Validation Report**  
**EPA Region I Tier I+**  
**18 NOAA PCB Congeners by 8270C and TOC by Method 9060**

**Client/Company:** Woods Hole Group, Inc. (WHG)

**Site/Project Name:** New Bedford Harbor Superfund Site – Long Term Monitoring (LTM) V

**Laboratory:** Alpha Analytical – Mansfield, MA

**Lab Project Number(s):** L0912904

**Date(s) of Collection:** September 22, 2009 through September 26, 2009

**Number / Type  
Samples & Analyses** 15 sediment samples for 18 NOAA PCB Congeners by EPA SW-846  
Method 8270C and Total Organic Carbon (TOC) by Method 9060

**Senior Data Reviewers:** Nancy C. Rothman, PhD, New Environmental Horizons, Inc.  
Susan D. Chapnick, New Environmental Horizons, Inc.

**Date Completed:** April 9, 2010

This EPA Region I Tier I+ validation for 18 NOAA PCB Congeners and TOC was performed with the following intentions: 1) to determine if the data were generated and reported in accordance with the *Quality Assurance Project Plan, New Bedford Harbor Long Term Monitoring V, New Bedford, MA*, prepared by Woods Hole Group, Inc., September 2009 (LTMV QAPP); Region I, *EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses*, December 1996, including *Part III – Pesticide/PCB Data Validation Functional Guidelines*, Draft February 2004; 2) to determine if the data met project data quality objectives for acceptable accuracy, precision, sensitivity; and technical usability; and 3) to generate an electronic deliverable of validated results with project-specific data validation qualifiers added.

The Data Validation Report consists of three parts:

- This Data Validation Report letter summarizing the actions taken;
- The database file of validated sample results with validation qualifiers, bias, and comments added based on actions taken; and
- Data Validation Checklists for TOC and PCB Congeners including the Surrogate Recovery Correction worksheet completed during this validation to document the Tier I+ review. The Checklists are an integral part of the DV Report as they contain comprehensive details of all quality control (QC) reviewed, the acceptance criteria used, and the professional judgment and actions taken.

## I. Sample Descriptions and Analytical Parameters

The sample IDs, date of sampling, identification analytical parameters reviewed and the sample type (e.g., field sample, field duplicate (FD), field equipment blank (EB), as applicable), are listed below in Table 1.

Table 1. Sample Descriptions and Analytical Parameters Validated

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type  |
|-----------|---------------|-----------------|----------|------------------------------------|--------------|
| 506525    | L0912904-01   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 506625    | L0912904-02   | 9/26/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 506725    | L0912904-03   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 506825    | L0912904-04   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 506925    | L0912904-05   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507025    | L0912904-06   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507125    | L0912904-07   | 9/24/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507225    | L0912904-08   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507325    | L0912904-09   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507425    | L0912904-10   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507525    | L0912904-11   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |

Table 1. Sample Descriptions and Analytical Parameters Validated - continued

| Sample ID | Lab Sample ID | Collection Date | Matrix   | Analytical Parameters <sup>1</sup> | Sample Type  |
|-----------|---------------|-----------------|----------|------------------------------------|--------------|
| 507625    | L0912904-12   | 9/23/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507725    | L0912904-13   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 504525    | L0912904-14   | 9/25/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |
| 507925    | L0912904-15   | 9/22/09         | Sediment | TOC & 18 NOAA Congeners            | Field Sample |

Analytical method references:

18 NOAA Congeners: *Determination of PCB Homologs, Individual Congeners, and Pesticides by Gas Chromatography/Mass Spectrometry in the Select Ion Monitoring (SIM) Mode (EPA 680 & 8270C)*, Alpha SOP O-015, Rev. 2, June 19, 2006.

TOC: SW-846 Method 9060 modified, Alpha SOP W-028

<sup>1</sup> Grain Size analysis was also performed on these samples; however, data validation for this parameter was not required. TOC analysis was performed on “as-received” sediments while the 18 NOAA Congeners were performed using “air-dried” sediments.

## II. Data Validation Report Summary

This Data Validation Report represents a Tier I+ validation of the 18 NOAA PCB Congener and TOC sample results and summary QC (method and matrix), which were used to evaluate accuracy, precision, and sensitivity compared to the NBH LTMV QAPP requirements.

The following QC elements, as applicable to the analytical methods, were reviewed:

- Data package completeness and reporting protocols
- Sample receipt, holding times and preservation criteria
- Blank results including Method Blanks, Equipment Blanks, & Trip blanks
- Laboratory Control Sample (LCS) recoveries / LCS Duplicate Recoveries
- Standard Reference Material (SRM) Recoveries
- Surrogate Recoveries
- Matrix Spike (MS) / Matrix Spike Duplicate (MSD) Recoveries
- MS/MSD, LCS/LCSD, sample/Laboratory Duplicate (LD), or sample/Field Duplicate (FD) Relative Percent Differences (RPDs)
- Sample result reporting (including compound lists, reporting limits, and units)
- Calibration criteria\* (including tune criteria, initial calibration and continuing calibration verification)
- Internal Standard (IS) Recoveries\*

- Retention Time windows\*
- Other method-specific QC if applicable and reported\* (e.g., serial dilution results for metals)
- Deficiencies or protocol deviations as noted in the Laboratory Narrative

\* This QC element is reviewed associated with the Tier II-type validation only. For Tier I+ validations this QC element is assumed to be acceptable unless otherwise noted in the laboratory narrative.

Based on this Tier I+ validation of the 18 NOAA PCB Congeners and TOC, all results were considered usable for project decisions based on a comparison to the NBH LTMV QAPP requirements and with the understanding of the potential uncertainty (bias) in the qualified results summarized in Table 2. NEH generated electronic validated results based on the project database file received from WHG for these data, by updating the following database fields for field samples and field QC only: VALID\_QUAL, VALIDATION\_LEVEL, VALIDATION, VALID\_DATE, BIAS, and DV\_COMMENT.

The remainder of this report documents “exceptions” to the NBH LTMV QAPP criteria or clarifications of data reported. QC elements not discussed below met all QAPP criteria. The full documentation of all QC elements reviewed during the Tier I+ validation are presented in the attached Data Validation Checklists.

### **Sample Receipt and Holding Time**

The sediment samples were received at the laboratory intact in four shipments at 1.6°C to 3.1°C. Aliquots of the “as-received” samples were analyzed for TOC, Grain Size, and percent solids. Samples were frozen upon receipt to arrest holding time for TOC analysis. All samples had percent solids content of 36-96%; therefore, these sediment samples were air-dried, as required by the QAPP, prior to Congener analysis. After air-drying, the percent solids content for all samples was greater than 81%.

### **Accuracy**

The Method Blank was non-detect for all PCB Congeners and TOC; therefore, blank action was not required. There was no Equipment Blank required to be collected along with these sediment samples.

Congener recoveries in the MS/MSD analysis conducted on sample 507125 were acceptable except for 2,3',4,4'-Tetrachlorobiphenyl (BZ#66), which recovered low compared to criteria in the MS and 2,2',5,5'-Tetrachlorobiphenyl (BZ#52), which recovered high compared to criteria in the MSD. Since the other spike (MSD or MS) was acceptable for these Congeners, no action was taken to qualify the unspiked sample based on professional judgment.

All TOC analyses were performed in replicate (duplicate burns), as a method modification consistent with the site QAPP requirements. The MS recoveries for TOC performed on sample 507125 were high in one replicate and within criteria in the other replicate. No action was taken based on professional judgment because the average MS recovery (of the two replicates) met criteria and the SRM recoveries were in control, indicating acceptable accuracy of the TOC method in the sediment matrix.

The Standard Reference Material for PCB Congeners (SRM NY/NJ Waterway Sediment) and TOC SRM reported acceptable recoveries for all Congeners and TOC certified in these SRMs.

### **Precision**

LCS/LCSD precision was unacceptable for all 18 NOAA Congeners except for 2,3,3',4,4'-Pentachlorobiphenyl (BZ#105), since the LCS recoveries were all low within criteria and the LCSD were all high within criteria. Since the MS/MSD showed acceptable precision and since the imprecision based on high relative percent differences (RPDs) in the LCS/LCSD were obviously related to the LCS having lower extraction efficiency than the LCSD, no action to qualify sample data was taken based on professional judgment.

MS/MSD precision in the analysis of sample 507125 was acceptable for all 18 NOAA Congeners. Sample/MD precision for TOC analysis of 507125, as well as precision between all replicates of TOC reported for each sample, was acceptable. These results are an indication of acceptable precision in the laboratory analysis of this matrix for PCB Congeners and TOC.

There were no Field Duplicates associated with the samples in this SDG. Three sets of Sample/FD were collected and are reported for the overall LTMV program. Data users are directed to the other LTMV DV reports for FD information.

### **Sensitivity & Reporting**

All samples met sensitivity requirements for PCB Congeners and TOC as indicated in NBH LTMV QAPP Table 1-3.

Data users should compute the average of the TOC replicate results (duplicate burns) for each sample and use this arithmetic average as the valid result for TOC.

An investigation by NEH into previous reporting of LTM data by Battelle indicated that Congener data were surrogate-recovery corrected and that non-detects were reported at Method Detection Limits (MDLs). These MDLs were surrogate-recovery corrected during the MDL study but were not corrected again based upon individual sample surrogate recovery results. A technical memo was written by NEH on January 29, 2010 (approved by Lee Weishar, WHG, and Mark Koenig, USACE), explaining Battelle's process for reporting previous LTM data (LTMIV and prior monitoring data), Alpha's process for reporting LTMV results, and recommendations for adjustment of the current LTMV data so that these data may be comparable to the data from previous sampling events reported by Battelle.

For Congener samples where the surrogates are not recovered because of analytical dilutions or when results were non-detect, the DV\_COMMENT "K2" was added to the validated database file to indicate that the reported value was not surrogate-recovery corrected.

For Congener samples where surrogate-recovery correction was performed, a separate Surrogate Recovery Correction excel worksheet was constructed (as part of the Data Validation Checklist process) showing the original lab reported result, identification of which surrogate was used for correction of each of the 18 NOAA Congeners, and the Surrogate Corrected Result. For surrogate-corrected results, the project database file was updated as follows:

1. The surrogate-corrected value, as shown in the Surrogate Recovery Correction worksheet, replaced the lab RESULT value in the validated database file;
2. The qualifier "K" was added to the VALID\_ QUAL field to identify the result as surrogate-recovery corrected; and
3. "K1" was added to the DV\_COMMENT field as the DV code to further indicate that the reported result was surrogate-recovery corrected.

Non-detects for Congeners were reported by Alpha at the Reporting Limit (RL), consistent with the LTMV QAPP requirements. Since non-detected results are not comparable between Alpha and Battelle because the basis for the non-detects are different (RL vs. MDL), non-detects and reporting limits were not surrogate-recovery corrected in the LTMV data.

For this SDG, all Congener samples reported surrogate recoveries. Surrogate-recovery correction was performed for all samples as documented in *Surrogate Recovery Correction\_L0912904*. Actions taken are listed below in Table 2.

Results reported below the sample-specific RLs are considered uncertain because they are below the calibration range. During this review, data below the sample-specific RLs were qualified as estimated (J), as shown in Table 2, and as described in the Data Validation Checklist.

The laboratory reported all results from DF > 1 analyses with a "D" qualifier. At Battelle's request, these "D" qualifiers were maintained during the DV process.

Table 2. Summary of Data Validation Actions

| Field Sample ID | Analyte  | Qualifier | Bias | Validation Comments   |
|-----------------|--|-----------|------|---|
| 504525          | All Congeners except:<br>Decachlorobiphenyl - Homologue  | DK        |      | Reported value is surrogate recovery corrected  |
| 504525          | Decachlorobiphenyl - Homologue   | DJK       | I    | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 506525          | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl                                     | K         |      | Reported value is surrogate recovery corrected  |
| 506525 & 506625 | 2,2',3,3',4,4',5,6-Octachlorobiphenyl  | U         |      | Reported value is not surrogate recovery corrected  |
| 506625          | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl &<br>Decachlorobiphenyl - Homologue | K         |      | Reported value is surrogate recovery corrected  |
| 506625          | Decachlorobiphenyl - Homologue   | JK        | I    | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |

Table 2. Summary of Data Validation Actions - continued

| <b>Field Sample ID</b>                                 | <b>Analyte</b>   | <b>Qualifier</b> | <b>Bias</b> | <b>Validation Comments</b>  |
|--|--|------------------|-------------|---|
| 506725   | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6 Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue  | K                |             | Reported value is surrogate recovery corrected  |
| 506725   | 2,2',3,3',4,4',5,6-Octachlorobiphenyl  | U                |             | Reported value is not surrogate recovery corrected  |
| 506725   | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue   | JK               | I           | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 506825   | All Congeners except:<br>2,2',3,3',4,4',5-Heptachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue | K                |             | Reported value is surrogate recovery corrected  |
| 506825   | 2,2',3,3',4,4',5-Heptachlorobiphenyl   | JK               | I           | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 506825   | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue   | U                |             | Reported value is not surrogate recovery corrected  |
| 506925, 507025,<br>507225, 507325,<br>507425, & 507625 | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue  | K                |             | Reported value is surrogate recovery corrected  |
| 506925, 507025,<br>507225, 507325,<br>507425, & 507625 | 2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue   | U                |             | Reported value is not surrogate recovery corrected  |
| 507125   | All Congeners except:<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue  | K                |             | Reported value is surrogate recovery corrected  |
| 507125   | 2,2',3,3',4,4',5,6-Octachlorobiphenyl &<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl  | U                |             | Reported value is not surrogate recovery corrected  |
| 507125   | Decachlorobiphenyl - Homologue   | JK               | I           | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |

Table 2. Summary of Data Validation Actions - continued

| Field Sample ID | Analyte  | Qualifier | Bias | Validation Comments   |
|-----------------|--|-----------|------|---|
| 507525          | 2,4'-Dichlorobiphenyl,<br>2,2',5-Trichlorobiphenyl,<br>2,4,4'-Trichlorobiphenyl,<br>2,2',3,5'-Tetrachlorobiphenyl,<br>2,2',5,5'-Tetrachlorobiphenyl,<br>2,3',4,4'-Tetrachlorobiphenyl,<br>2,2',4,5,5'-Pentachlorobiphenyl,<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,3',4,4',5-Pentachlorobiphenyl,<br>2,2',3,3',4',5'-Hexachlorobiphenyl, &<br>2,2',4,4',5,5'-Hexachlorobiphenyl | K         |      | Reported value is surrogate recovery corrected  |
| 507525          | 2,2',3,4,4',5,5'-Heptachlorobiphenyl &<br>2,2',3,4',5,5',6-Heptachlorobiphenyl   | JK        | I    | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 507525          | 2,2',3,3',4,4'-Hexachlorobiphenyl<br>2,2',3,3',4,4',5-Heptachlorobiphenyl<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>Decachlorobiphenyl - Homologue   | U         |      | Reported value is not surrogate recovery corrected  |
| 507725          | 2,4'-Dichlorobiphenyl,<br>2,2',5-Trichlorobiphenyl,<br>2,4,4'-Trichlorobiphenyl,<br>2,2',3,5'-Tetrachlorobiphenyl,<br>2,2',5,5'-Tetrachlorobiphenyl,<br>2,3',4,4'-Tetrachlorobiphenyl,<br>2,2',4,5,5'-Pentachlorobiphenyl,<br>2,3',4,4',5-Pentachlorobiphenyl,<br>2,2',3,4,4',5'-Hexachlorobiphenyl, &<br>2,2',4,4',5,5'-Hexachlorobiphenyl                                      | K         |      | Reported value is surrogate recovery corrected  |
| 507725          | 2,3,3',4,4'-Pentachlorobiphenyl  | JK        | I    | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 507725          | 2,2',3,3',4,4'-Hexachlorobiphenyl,<br>2,2',3,3',4,4',5-Heptachlorobiphenyl,<br>2,2',3,4,4',5,5'-Heptachlorobiphenyl,<br>2,2',3,4',5,5',6-Heptachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl,<br>& Decachlorobiphenyl - Homologue   | U         |      | Reported value is not surrogate recovery corrected  |

Table 2. Summary of Data Validation Actions - continued

| Field Sample ID | Analyte   | Qualifier | Bias | Validation Comments   |
|-----------------|---|-----------|------|---|
| 507925          | 2,4'-Dichlorobiphenyl,<br>2,2',5-Trichlorobiphenyl,<br>2,4,4'-Trichlorobiphenyl,<br>2,2',3,5'-Tetrachlorobiphenyl,<br>2,2',5,5'-Tetrachlorobiphenyl,<br>2,3',4,4'-Tetrachlorobiphenyl,<br>2,2',4,5,5'-Pentachlorobiphenyl,<br>2,3,3',4,4'-Pentachlorobiphenyl,<br>2,3',4,4',5-Pentachlorobiphenyl,<br>2,2',3,3',4,4'-Hexachlorobiphenyl,<br>2,2',3,4,4',5'-Hexachlorobiphenyl, &<br>2,2',4,4',5,5'-Hexachlorobiphenyl | K         |      | Reported value is surrogate recovery corrected  |
| 507925          | 2,2',3,4,4',5,5'-Heptachlorobiphenyl &<br>2,2',3,4',5,5',6-Heptachlorobiphenyl  | JK        | I    | Reported value is surrogate recovery corrected + Result uncertain below the calibration range |
| 507925          | 2,2',3,3',4,4',5-Heptachlorobiphenyl,<br>2,2',3,3',4,4',5,6-Octachlorobiphenyl,<br>2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl<br>& Decachlorobiphenyl - Homologue   | U         |      | Reported value is not surrogate recovery corrected  |

*Qualifiers: U = Analyte is non-detect at or above the sample-specific reporting limit (RL); UJ = Non-detect is estimated at the RL; J = Result is estimated; EB = analyte detected in associated equipment blank; EMPC = estimated maximum possible concentration (PCB congeners only); R = Result is rejected and is unusable for project decisions; D = result reported from a dilution analysis (added by laboratory); K = Result is Surrogate Recovery Corrected.*

*Bias: L = Low; H = High; I = Indeterminate*

*Abbreviations used in Table 2: none*

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 504525  | 5        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 41.9       | D        | 76.2                        | UG/KG       |
| 504525  | 5        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 196        | D        | 356                         | UG/KG       |
| 504525  | 5        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 591        | D        | 1075                        | UG/KG       |
| 504525  | 5        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 192        | D        | 349                         | UG/KG       |
| 504525  | 5        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 584        | D        | 1062                        | UG/KG       |
| 504525  | 5        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 78         | D        | 142                         | UG/KG       |
| 504525  | 5        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 420        | D        | 764                         | UG/KG       |
| 504525  | 5        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 98.8       | D        | 112                         | UG/KG       |
| 504525  | 5        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 363        | D        | 413                         | UG/KG       |
| 504525  | 5        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 71.1       | D        | 80.8                        | UG/KG       |
| 504525  | 5        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 319        | D        | 363                         | UG/KG       |
| 504525  | 5        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 192        | D        | 218                         | UG/KG       |
| 504525  | 5        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 34.1       | D        | 38.8                        | UG/KG       |
| 504525  | 5        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 47.8       | D        | 54.3                        | UG/KG       |
| 504525  | 5        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 32.7       | D        | 37.2                        | UG/KG       |
| 504525  | 5        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 2.48       | D        | 2.82                        | UG/KG       |
| 504525  | 5        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 3.46       | D        | 3.93                        | UG/KG       |
| 504525  | 5        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 1.02       | DJ       | 1.16                        | UG/KG       |
| 504525  | 5        | CS-10386-84-2 | Dbob   |     |                               | 55         | D        |                             | PCT_RE<br>C |
| 504525  | 5        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 88         | D        |                             | PCT_RE<br>C |
| 506525  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 21.2       |          | 28.6                        | UG/KG       |
| 506525  | 1        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 51.4       |          | 69.5                        | UG/KG       |
| 506525  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 127        |          | 172                         | UG/KG       |
| 506525  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 64.8       |          | 87.6                        | UG/KG       |
| 506525  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 131        |          | 177                         | UG/KG       |
| 506525  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 32         |          | 43.2                        | UG/KG       |
| 506525  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 75.5       |          | 102                         | UG/KG       |
| 506525  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 28.8       |          | 29.7                        | UG/KG       |
| 506525  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 105        |          | 108                         | UG/KG       |
| 506525  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 22.2       |          | 22.9                        | UG/KG       |
| 506525  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 90.2       |          | 93.0                        | UG/KG       |
| 506525  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 56.1       |          | 57.8                        | UG/KG       |
| 506525  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 7.1        |          | 7.32                        | UG/KG       |
| 506525  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 10.9       |          | 11.2                        | UG/KG       |
| 506525  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 6.24       |          | 6.43                        | UG/KG       |
| 506525  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.376      | U        | NA                          | UG/KG       |
| 506525  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.744      |          | 0.767                       | UG/KG       |
| 506525  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.44       |          | 0.454                       | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 506525  | 1        | CS-10386-84-2 | Dbob   |     |                               | 74         |          |                             | PCT_RE<br>C |
| 506525  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 97         |          |                             | PCT_RE<br>C |
| 506625  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 14.3       |          | 18.6                        | UG/KG       |
| 506625  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 14.9       |          | 19.4                        | UG/KG       |
| 506625  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 54.3       |          | 70.5                        | UG/KG       |
| 506625  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 16.6       |          | 21.6                        | UG/KG       |
| 506625  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 36.1       |          | 46.9                        | UG/KG       |
| 506625  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 12.7       |          | 16.5                        | UG/KG       |
| 506625  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 41         |          | 53.2                        | UG/KG       |
| 506625  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 13.8       |          | 13.0                        | UG/KG       |
| 506625  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 42.4       |          | 40.0                        | UG/KG       |
| 506625  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 9.14       |          | 8.62                        | UG/KG       |
| 506625  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 36.8       |          | 34.7                        | UG/KG       |
| 506625  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 28.2       |          | 26.6                        | UG/KG       |
| 506625  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 2.21       |          | 2.08                        | UG/KG       |
| 506625  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 4.72       |          | 4.45                        | UG/KG       |
| 506625  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 2.69       |          | 2.54                        | UG/KG       |
| 506625  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.379      | U        | NA                          | UG/KG       |
| 506625  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.383      |          | 0.361                       | UG/KG       |
| 506625  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.269      | J        | 0.254                       | UG/KG       |
| 506625  | 1        | CS-10386-84-2 | Dbob   |     |                               | 77         |          |                             | PCT_RE<br>C |
| 506625  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 106        |          |                             | PCT_RE<br>C |
| 506725  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 6.72       |          | 9.21                        | UG/KG       |
| 506725  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 7          |          | 9.59                        | UG/KG       |
| 506725  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 28         |          | 38.4                        | UG/KG       |
| 506725  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 8.63       |          | 11.8                        | UG/KG       |
| 506725  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 17.2       |          | 23.6                        | UG/KG       |
| 506725  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 5.74       |          | 7.86                        | UG/KG       |
| 506725  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 19.4       |          | 26.6                        | UG/KG       |
| 506725  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 5.81       |          | 6.05                        | UG/KG       |
| 506725  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 21.4       |          | 22.3                        | UG/KG       |
| 506725  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 5.21       |          | 5.43                        | UG/KG       |
| 506725  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 17.8       |          | 18.5                        | UG/KG       |
| 506725  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 15.7       |          | 16.4                        | UG/KG       |
| 506725  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 1.15       |          | 1.20                        | UG/KG       |
| 506725  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 2.46       |          | 2.56                        | UG/KG       |
| 506725  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 1.61       |          | 1.68                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 506725  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.338      | U        | NA                          | UG/KG       |
| 506725  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.182      | J        | 0.190                       | UG/KG       |
| 506725  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.176      | J        | 0.183                       | UG/KG       |
| 506725  | 1        | CS-10386-84-2 | Dbob   |     |                               | 73         |          |                             | PCT_RE<br>C |
| 506725  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 96         |          |                             | PCT_RE<br>C |
| 506825  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 1.82       |          | 2.53                        | UG/KG       |
| 506825  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 1.87       |          | 2.60                        | UG/KG       |
| 506825  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 7.04       |          | 9.78                        | UG/KG       |
| 506825  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 2.48       |          | 3.44                        | UG/KG       |
| 506825  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 5.24       |          | 7.28                        | UG/KG       |
| 506825  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 1.75       |          | 2.43                        | UG/KG       |
| 506825  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 5.31       |          | 7.38                        | UG/KG       |
| 506825  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 2.27       |          | 2.52                        | UG/KG       |
| 506825  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 6.29       |          | 6.99                        | UG/KG       |
| 506825  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 2.32       |          | 2.58                        | UG/KG       |
| 506825  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 6.04       |          | 6.71                        | UG/KG       |
| 506825  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 5.04       |          | 5.60                        | UG/KG       |
| 506825  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.34       | J        | 0.378                       | UG/KG       |
| 506825  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.569      |          | 0.632                       | UG/KG       |
| 506825  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.431      |          | 0.479                       | UG/KG       |
| 506825  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.395      | U        | NA                          | UG/KG       |
| 506825  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.395      | U        | NA                          | UG/KG       |
| 506825  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.395      | U        | NA                          | UG/KG       |
| 506825  | 1        | CS-10386-84-2 | Dbob   |     |                               | 72         |          |                             | PCT_RE<br>C |
| 506825  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 90         |          |                             | PCT_RE<br>C |
| 506925  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 2.71       |          | 3.66                        | UG/KG       |
| 506925  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 3.1        |          | 4.19                        | UG/KG       |
| 506925  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 11.7       |          | 15.8                        | UG/KG       |
| 506925  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 3.74       |          | 5.05                        | UG/KG       |
| 506925  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 9.97       |          | 13.5                        | UG/KG       |
| 506925  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 3.41       |          | 4.61                        | UG/KG       |
| 506925  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 11.9       |          | 16.1                        | UG/KG       |
| 506925  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 3.51       |          | 3.69                        | UG/KG       |
| 506925  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 13         |          | 13.7                        | UG/KG       |
| 506925  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 3.54       |          | 3.73                        | UG/KG       |
| 506925  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 12.4       |          | 13.1                        | UG/KG       |
| 506925  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 7.84       |          | 8.25                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 506925  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.756      |          | 0.796                       | UG/KG       |
| 506925  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 1.96       |          | 2.06                        | UG/KG       |
| 506925  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 1.37       |          | 1.44                        | UG/KG       |
| 506925  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.355      | U        | NA                          | UG/KG       |
| 506925  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.355      | U        | NA                          | UG/KG       |
| 506925  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.355      | U        | NA                          | UG/KG       |
| 506925  | 1        | CS-10386-84-2 | Dbob   |     |                               | 74         |          |                             | PCT_RE<br>C |
| 506925  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 95         |          |                             | PCT_RE<br>C |
| 507025  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 5.4        |          | 7.61                        | UG/KG       |
| 507025  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 4.28       |          | 6.03                        | UG/KG       |
| 507025  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 20.8       |          | 29.3                        | UG/KG       |
| 507025  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 5.4        |          | 7.61                        | UG/KG       |
| 507025  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 12         |          | 16.9                        | UG/KG       |
| 507025  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 4.61       |          | 6.49                        | UG/KG       |
| 507025  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 13.2       |          | 18.6                        | UG/KG       |
| 507025  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 4.83       |          | 5.68                        | UG/KG       |
| 507025  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 16.4       |          | 19.3                        | UG/KG       |
| 507025  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 3.13       |          | 3.68                        | UG/KG       |
| 507025  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 12.8       |          | 15.1                        | UG/KG       |
| 507025  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 8.12       |          | 9.55                        | UG/KG       |
| 507025  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.9        |          | 1.06                        | UG/KG       |
| 507025  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 1.88       |          | 2.21                        | UG/KG       |
| 507025  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.971      |          | 1.14                        | UG/KG       |
| 507025  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.395      | U        | NA                          | UG/KG       |
| 507025  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.395      | U        | NA                          | UG/KG       |
| 507025  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.395      | U        | NA                          | UG/KG       |
| 507025  | 1        | CS-10386-84-2 | Dbob   |     |                               | 71         |          |                             | PCT_RE<br>C |
| 507025  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 85         |          |                             | PCT_RE<br>C |
| 507125  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 3.63       |          | 4.91                        | UG/KG       |
| 507125  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 3.63       |          | 4.91                        | UG/KG       |
| 507125  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 15.4       |          | 20.8                        | UG/KG       |
| 507125  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 4.38       |          | 5.92                        | UG/KG       |
| 507125  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 10.3       |          | 13.9                        | UG/KG       |
| 507125  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 3.78       |          | 5.11                        | UG/KG       |
| 507125  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 11.6       |          | 15.7                        | UG/KG       |
| 507125  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 3.18       |          | 3.74                        | UG/KG       |
| 507125  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 13         |          | 15.3                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 507125  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 3.79       |          | 4.46                        | UG/KG       |
| 507125  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 11         |          | 12.9                        | UG/KG       |
| 507125  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 10.7       |          | 12.6                        | UG/KG       |
| 507125  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.715      |          | 0.841                       | UG/KG       |
| 507125  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 1.45       |          | 1.71                        | UG/KG       |
| 507125  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 1.17       |          | 1.38                        | UG/KG       |
| 507125  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.393      | U        | NA                          | UG/KG       |
| 507125  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.393      | U        | NA                          | UG/KG       |
| 507125  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.334      | J        | 0.393                       | UG/KG       |
| 507125  | 1        | CS-10386-84-2 | Dbob   |     |                               | 74         |          |                             | PCT_RE<br>C |
| 507125  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 85         |          |                             | PCT_RE<br>C |
| 507225  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 3.45       |          | 5.48                        | UG/KG       |
| 507225  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 3.5        |          | 5.56                        | UG/KG       |
| 507225  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 13.2       |          | 21.0                        | UG/KG       |
| 507225  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 4.11       |          | 6.52                        | UG/KG       |
| 507225  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 10.8       |          | 17.1                        | UG/KG       |
| 507225  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 3.34       |          | 5.30                        | UG/KG       |
| 507225  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 11.8       |          | 18.7                        | UG/KG       |
| 507225  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 3.8        |          | 4.63                        | UG/KG       |
| 507225  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 13.1       |          | 16.0                        | UG/KG       |
| 507225  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 3.75       |          | 4.57                        | UG/KG       |
| 507225  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 12.9       |          | 15.7                        | UG/KG       |
| 507225  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 10.7       |          | 13.0                        | UG/KG       |
| 507225  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.753      |          | 0.918                       | UG/KG       |
| 507225  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 1.76       |          | 2.15                        | UG/KG       |
| 507225  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 1.3        |          | 1.59                        | UG/KG       |
| 507225  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.349      | U        | NA                          | UG/KG       |
| 507225  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.349      | U        | NA                          | UG/KG       |
| 507225  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.349      | U        | NA                          | UG/KG       |
| 507225  | 1        | CS-10386-84-2 | Dbob   |     |                               | 63         |          |                             | PCT_RE<br>C |
| 507225  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 82         |          |                             | PCT_RE<br>C |
| 507325  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 2.87       |          | 4.10                        | UG/KG       |
| 507325  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 2.59       |          | 3.70                        | UG/KG       |
| 507325  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 10         |          | 14.3                        | UG/KG       |
| 507325  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 2.18       |          | 3.11                        | UG/KG       |
| 507325  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 6.75       |          | 9.64                        | UG/KG       |
| 507325  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 3.05       |          | 4.36                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 507325  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 7.32       |          | 10.5                        | UG/KG       |
| 507325  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 2.7        |          | 3.03                        | UG/KG       |
| 507325  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 9.23       |          | 10.4                        | UG/KG       |
| 507325  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 2.51       |          | 2.82                        | UG/KG       |
| 507325  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 7.71       |          | 8.66                        | UG/KG       |
| 507325  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 6.54       |          | 7.35                        | UG/KG       |
| 507325  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.47       |          | 0.528                       | UG/KG       |
| 507325  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.712      |          | 0.800                       | UG/KG       |
| 507325  | 1        | 52663-68-0    | 2,2',3,4,5,5',6-Heptachlorobiphenyl              | 187 | BZ198                         | 0.672      |          | 0.755                       | UG/KG       |
| 507325  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.367      | U        | NA                          | UG/KG       |
| 507325  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.367      | U        | NA                          | UG/KG       |
| 507325  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.367      | U        | NA                          | UG/KG       |
| 507325  | 1        | CS-10386-84-2 | Dbob   |     |                               | 70         |          |                             | PCT_RE<br>C |
| 507325  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 89         |          |                             | PCT_RE<br>C |
| 507425  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 3.36       |          | 4.87                        | UG/KG       |
| 507425  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 3.29       |          | 4.77                        | UG/KG       |
| 507425  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 12.3       |          | 17.8                        | UG/KG       |
| 507425  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 2.85       |          | 4.13                        | UG/KG       |
| 507425  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 8.21       |          | 11.9                        | UG/KG       |
| 507425  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 2.92       |          | 4.23                        | UG/KG       |
| 507425  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 9.39       |          | 13.6                        | UG/KG       |
| 507425  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 3.32       |          | 3.82                        | UG/KG       |
| 507425  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 11.8       |          | 13.6                        | UG/KG       |
| 507425  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 2.8        |          | 3.22                        | UG/KG       |
| 507425  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 9.79       |          | 11.3                        | UG/KG       |
| 507425  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 8.66       |          | 10.0                        | UG/KG       |
| 507425  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.713      |          | 0.820                       | UG/KG       |
| 507425  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 1.06       |          | 1.22                        | UG/KG       |
| 507425  | 1        | 52663-68-0    | 2,2',3,4,5,5',6-Heptachlorobiphenyl              | 187 | BZ198                         | 0.845      |          | 0.971                       | UG/KG       |
| 507425  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.379      | U        | NA                          | UG/KG       |
| 507425  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.379      | U        | NA                          | UG/KG       |
| 507425  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.379      | U        | NA                          | UG/KG       |
| 507425  | 1        | CS-10386-84-2 | Dbob   |     |                               | 69         |          |                             | PCT_RE<br>C |
| 507425  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 87         |          |                             | PCT_RE<br>C |
| 507525  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 0.666      |          | 0.912                       | UG/KG       |
| 507525  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 0.696      |          | 0.953                       | UG/KG       |
| 507525  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 2.42       |          | 3.32                        | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 507525  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 0.43       |          | 0.589                       | UG/KG       |
| 507525  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1.94       |          | 2.66                        | UG/KG       |
| 507525  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 0.581      |          | 0.796                       | UG/KG       |
| 507525  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1.8        |          | 2.47                        | UG/KG       |
| 507525  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 0.532      |          | 0.605                       | UG/KG       |
| 507525  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 2.22       |          | 2.52                        | UG/KG       |
| 507525  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 0.328      | U        | NA                          | UG/KG       |
| 507525  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 2.35       |          | 2.67                        | UG/KG       |
| 507525  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 1.82       |          | 2.07                        | UG/KG       |
| 507525  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.328      | U        | NA                          | UG/KG       |
| 507525  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.23       | J        | 0.261                       | UG/KG       |
| 507525  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.19       | J        | 0.216                       | UG/KG       |
| 507525  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.328      | U        | NA                          | UG/KG       |
| 507525  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.328      | U        | NA                          | UG/KG       |
| 507525  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.328      | U        | NA                          | UG/KG       |
| 507525  | 1        | CS-10386-84-2 | Dbob   |     |                               | 73         |          |                             | PCT_RE<br>C |
| 507525  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 88         |          |                             | PCT_RE<br>C |
| 507625  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 3          |          | 4.00                        | UG/KG       |
| 507625  | 1        | 37680-65-2    | 2,2',5-Trichlorobiphenyl                         | 18  | DBOB                          | 3.11       |          | 4.15                        | UG/KG       |
| 507625  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 10.7       |          | 14.3                        | UG/KG       |
| 507625  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 1.07       |          | 1.43                        | UG/KG       |
| 507625  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 7.81       |          | 10.4                        | UG/KG       |
| 507625  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 2.13       |          | 2.84                        | UG/KG       |
| 507625  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 8.38       |          | 11.2                        | UG/KG       |
| 507625  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 3.64       |          | 3.87                        | UG/KG       |
| 507625  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 10.6       |          | 11.3                        | UG/KG       |
| 507625  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 3.83       |          | 4.07                        | UG/KG       |
| 507625  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 10.2       |          | 10.9                        | UG/KG       |
| 507625  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 8.59       |          | 9.14                        | UG/KG       |
| 507625  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.56       |          | 0.596                       | UG/KG       |
| 507625  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 1.53       |          | 1.63                        | UG/KG       |
| 507625  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.585      |          | 0.622                       | UG/KG       |
| 507625  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.352      | U        | NA                          | UG/KG       |
| 507625  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.352      | U        | NA                          | UG/KG       |
| 507625  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.352      | U        | NA                          | UG/KG       |
| 507625  | 1        | CS-10386-84-2 | Dbob   |     |                               | 75         |          |                             | PCT_RE<br>C |
| 507625  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 94         |          |                             | PCT_RE<br>C |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 507725  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 0.486      |          | 0.657                       | UG/KG       |
| 507725  | 1        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 0.489      |          | 0.661                       | UG/KG       |
| 507725  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 1.39       |          | 1.88                        | UG/KG       |
| 507725  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1.22       |          | 1.65                        | UG/KG       |
| 507725  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 0.336      |          | 0.454                       | UG/KG       |
| 507725  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1.02       |          | 1.38                        | UG/KG       |
| 507725  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 0.254      | J        | 0.265                       | UG/KG       |
| 507725  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 1.23       |          | 1.28                        | UG/KG       |
| 507725  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 1.12       |          | 1.17                        | UG/KG       |
| 507725  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 1.04       |          | 1.08                        | UG/KG       |
| 507725  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.326      | U        | NA                          | UG/KG       |
| 507725  | 1        | CS-10386-84-2 | Dbob   |     |                               | 74         |          |                             | PCT_RE<br>C |
| 507725  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 96         |          |                             | PCT_RE<br>C |
| 507925  | 1        | 34883-43-7    | 2,4'-Dichlorobiphenyl                            | 8   | DBOB                          | 0.545      |          | 0.717                       | UG/KG       |
| 507925  | 1        | 37680-65-2    | 2,2',5'-Trichlorobiphenyl                        | 18  | DBOB                          | 0.734      |          | 0.966                       | UG/KG       |
| 507925  | 1        | 7012-37-5     | 2,4,4'-Trichlorobiphenyl                         | 28  | DBOB                          | 2.36       |          | 3.11                        | UG/KG       |
| 507925  | 1        | 41464-39-5    | 2,2',3,5'-Tetrachlorobiphenyl                    | 44  | DBOB                          | 0.946      |          | 1.24                        | UG/KG       |
| 507925  | 1        | 35693-99-3    | 2,2',5,5'-Tetrachlorobiphenyl                    | 52  | DBOB                          | 1.91       |          | 2.51                        | UG/KG       |
| 507925  | 1        | 32598-10-0    | 2,3',4,4'-Tetrachlorobiphenyl                    | 66  | DBOB                          | 0.535      |          | 0.704                       | UG/KG       |
| 507925  | 1        | 37680-73-2    | 2,2',4,5,5'-Pentachlorobiphenyl                  | 101 | DBOB                          | 1.66       |          | 2.18                        | UG/KG       |
| 507925  | 1        | 32598-14-4    | 2,3,3',4,4'-Pentachlorobiphenyl                  | 105 | BZ198                         | 0.767      |          | 0.816                       | UG/KG       |
| 507925  | 1        | 31508-00-6    | 2,3',4,4',5-Pentachlorobiphenyl                  | 118 | BZ198                         | 1.8        |          | 1.91                        | UG/KG       |
| 507925  | 1        | 38380-07-3    | 2,2',3,3',4,4'-Hexachlorobiphenyl                | 128 | BZ198                         | 0.424      |          | 0.451                       | UG/KG       |
| 507925  | 1        | 35065-28-2    | 2,2',3,4,4',5'-Hexachlorobiphenyl                | 138 | BZ198                         | 2.29       |          | 2.44                        | UG/KG       |
| 507925  | 1        | 35065-27-1    | 2,2',4,4',5,5'-Hexachlorobiphenyl                | 153 | BZ198                         | 1.89       |          | 2.01                        | UG/KG       |
| 507925  | 1        | 35065-30-6    | 2,2',3,3',4,4',5-Heptachlorobiphenyl             | 170 | BZ198                         | 0.336      | U        | NA                          | UG/KG       |
| 507925  | 1        | 35065-29-3    | 2,2',3,4,4',5,5'-Heptachlorobiphenyl             | 180 | BZ198                         | 0.303      | J        | 0.322                       | UG/KG       |
| 507925  | 1        | 52663-68-0    | 2,2',3,4',5,5',6-Heptachlorobiphenyl             | 187 | BZ198                         | 0.293      | J        | 0.312                       | UG/KG       |
| 507925  | 1        | 52663-78-2    | 2,2',3,3',4,4',5,6-Octachlorobiphenyl            | 195 | BZ198                         | 0.336      | U        | NA                          | UG/KG       |
| 507925  | 1        | 40186-72-9    | 2,2',3,3',4,4',5,5',6-Nonachlorobiphenyl         | 206 | BZ198                         | 0.336      | U        | NA                          | UG/KG       |
| 507925  | 1        | 2051-24-3     | Decachlorobiphenyl - Homologue                   | 209 | BZ198                         | 0.336      | U        | NA                          | UG/KG       |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

LTMV  
2009 Sampling  
Surrogate Recovery Correction Worksheet

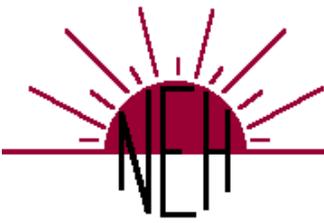
| SAMP_ID | DILUTION | PARAM_CODE    | DESCRIPTION                                      | BZ# | Surrogate Used for Correction | LAB RESULT | LAB_QUAL | Surrogate Corrected RESULT* | UNIT        |
|---------|----------|---------------|--|-----|-------------------------------|------------|----------|-----------------------------|-------------|
| 507925  | 1        | CS-10386-84-2 | Dbob   |     |                               | 76         |          |                             | PCT_RE<br>C |
| 507925  | 1        | CS-68194-17-2 | 2,2',3,3',4,5,5',6-Octachlorobiphenyl (Obsolete) | 198 |                               | 94         |          |                             | PCT_RE<br>C |

\*Corrected Result = Lab Result x (100/(Surrogate % Recovery))

Please see the LTMV DV Checklist for a complete description of the surrogate correction issues.

**APPENDIX B. PCB SURROGATE RECOVERY CORRECTION  
TECHNICAL MEMORANDUM**

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## Technical Memorandum

To: Lee Weishar, Woods Hole Group, Inc.  
From: Nancy C. Rothman, New Environmental Horizons, Inc.  
Date: January 29, 2010  
Re: PCB Surrogate Recovery Correction for LTMV

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During the development of the New Bedford Harbor Long Term Monitoring Program V (LTMV) Quality Assurance Project Plan, it was determined that historical LTM PCB Congener data were surrogate recovery corrected by Battelle, at the laboratory level, prior to inclusion of the data into the project database. In December 2009, I had the opportunity of speaking with a chemist at Battelle, who worked on the LTM IV project, and found out the following about their procedures for reporting of PCB Congener data:

- Battelle was aware that samples may require dilution for accurate quantitation; therefore, higher than normal spike levels of surrogates were added to the samples prior to extraction. Quantitation of the 18 NOAA Congeners was performed by Gas Chromatography-Electron Capture Detection (GC-ECD).
- All efforts were made to have surrogate recoveries reported for each sample so that multiple dilutions of some sample extracts were performed to not only quantitate the PCB Congeners but to also quantitate the surrogates.
- Two surrogates, PCB34 and PCB112, were used for recovery correcting sample data. PCB34 was used to recovery correct the following congeners: PCB8, PCB18, PCB28, PCB44, PCB52, PCB66, and PCB101. PCB112 was used to recovery correct the remaining 11 congeners (PCB105, PCB118, PCB128, PCB138, PCB153, PCB170, PCB180, PCB187, PCB195, PCB206, and PCB209).
- Battelle used surrogate recovery information from the lowest valid dilution analysis of an extract to associate with all other dilution data for that extract. For example, if a dilution factor (DF) = 10 were performed resulting in acceptable recovery for surrogates PCB34 and PCB112, yet the extract required a DF=100 to accurately quantitate the 18 NOAA Congeners, the DF=10 surrogate recoveries were used to correct the DF=100 sample data.
- Recovery correction was performed on results retaining all possible calculation values (e.g., if output of the GC-ECD data system reported a result with 10 numbers, the entire data output was used in performing correction).

- If for some reason one of the surrogates was not recovered, or recovered poorly (i.e., below acceptance criteria), all 18 NOAA Congeners were corrected using the one surrogate with acceptable recovery.
- Recovery Correction for detected results occurred as follows:

$$\text{Corrected Result} = \text{Uncorrected Result} \times (100/(\text{Surrogate \% Recovery}))$$

For example if an uncorrected congener result was 128.5398  $\mu\text{g}/\text{Kg}$  (retaining all values reported by the GC-ECD data system) and the surrogate was recovered at 85.46% (also retaining all values reported by GC system), then the corrected result is:

$$128.5398 (100/85.46) = 150.4093 \mu\text{g}/\text{Kg}$$

If instead the surrogate was recovered at 112.64%, then the corrected result is:

$$128.5398 (100/112.64) = 114.1156 \mu\text{g}/\text{Kg}$$

- Battelle reported non-detects at sample-specific Method Detection Limits (MDLs). These MDLs were surrogate recovery corrected when they were generated originally but Battelle did not recovery correct the MDLs on a sample-specific basis for LTMIV.
- Battelle currently has added a comment code to the historical LTM data to indicate that these results have been surrogate recovery corrected.

There are some notable differences in how LTMV data are being generated by Alpha as compared to the Battelle procedures listed above: 1) Alpha did not use higher than normal levels for spiking of surrogates prior to extraction; 2) Alpha has generated PCB Congener results using Gas Chromatography/Mass Spectrometry operated in the Selected Ion Monitoring mode (GC/MS-SIM); 3) the surrogates used by Alpha are 4,4'-Dibromooctafluorobiphenyl (DBOB) and PCB198; 4) all data generated by Alpha for the 18 NOAA Congeners are *not* surrogate recovery corrected, as required by laboratory policy; 5) data are reported to 3 significant figures and surrogates to 2-to-3 significant figures at most as required by the methods; and 6) non-detects are reported at the sample-specific reporting limit (RL)

To ensure data comparability between the various phases of the LTM project, it has been decided that the LTMV data need recovery correction. After discussing this issue with the Battelle database administrator, Paul Dragos, it is proposed that NEH will perform this recovery correction during the data validation process. The recommended procedure for this is as follows:

- Alpha/WHG team will electronically deliver data to Battelle and Battelle will generate an electronic deliverable for NEH's use in the project-required database format.
- NEH will perform the data validation choosing results for reporting, if multiple analyses are performed, so that only one result for each of the 18 NOAA congeners for each sample is reported in the validated database file.
- Valid data will be surrogate recovery corrected by NEH using the same logic used by Battelle. DBOB will be used to recovery correct the congeners PCB8, PCB18, PCB28, PCB44, PCB52, PCB66, and PCB101 and surrogate PCB198 will be used to recovery correct congeners PCB105, PCB118, PCB128, PCB138, PCB153, PCB170, PCB180, PCB187, PCB195, PCB206, and PCB209. Alpha's MDL study, performed in August 2009, indicates that this assignment for surrogate to congener is appropriate (i.e., that the surrogate used for correction is the one closest in retention time to the congener being corrected).
- NEH will replace the lab uncorrected value with the corrected value and add a comment code to the database file indicating the lab value was replaced (same code as Battelle has used for historical data).
- If both surrogates are not recovered at all or if recovery is very poor in the judgment of NEH recovery correction will not occur. In these instances, NEH will add a comment code to the database result indicating that recovery correction was not possible.
- Non-detects will be reported at the sample-specific RL and will not be recovery corrected.

Data users are cautioned that even after NEH has performed surrogate recovery correction for LTMV PCB congener data, that there may be data comparability issues across the complete LTM data set. Trending of non-detects for LTM must recognize the difference in reporting of non-detects using MDLs versus reporting non-detects at RLs. Additionally, using final uncorrected data (as reported by Alpha) versus data output from the instrument (as reported by Battelle) as the starting point for recovery correction, may lead to differences in results, especially as levels of PCB Congeners increase.

**APPENDIX C. STATION DATA FROM THE 2009 NBH LTM V  
SURVEY**

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| Event Number | Visit Number | Station ID | Sample Date/Time | Latitude   | Longitude  | Depth (m) |
|--------------|--------------|------------|------------------|------------|------------|-----------|
| 5001         | 1            | 105        | 9/24/2009 11:04  | 41 40.5809 | 70 54.9081 | 1.3       |
| 5002         | 1            | 108        | 9/24/2009 9:56   | 41 40.4973 | 70 54.9666 | 1.2       |
| 5003         | 1            | 109        | 9/24/2009 12:00  | 41 40.4981 | 70 54.8441 | 1.3       |
| 5004         | 1            | 111        | 9/24/2009 14:16  | 41 40.4153 | 70 54.9071 | 2.4       |
| 5005         | 1            | 114        | 9/24/2009 15:16  | 41 40.3335 | 70 54.9709 | 2.1       |
| 5006         | 1            | 115        | 9/24/2009 13:09  | 41 40.3350 | 70 54.8480 | 1.2       |
| 5007         | 1            | 117        | 9/27/2009 11:27  | 41 40.2771 | 70 55.0455 | 1.5       |
| 5008         | 1            | 120        | 9/27/2009 9:57   | 41 40.1437 | 70 55.1140 | 1.4       |
| 5009         | 1            | 121        | 9/27/2009 10:49  | 41 40.1419 | 70 54.9868 | 1.4       |
| 5010         | 1            | 123        | 9/27/2009 8:57   | 41 40.0869 | 70 55.0355 | 2.0       |
| 5011         | 1            | 125        | 9/23/2009 12:18  | 41 40.0044 | 70 55.1013 | 4.0       |
| 5012         | 1            | 126        | 9/23/2009 10:50  | 41 40.0046 | 70 54.9786 | 1.0       |
| 5013         | 1            | 128        | 9/23/2009 9:39   | 41 39.9217 | 70 55.0374 | 2.8       |
| 5014         | 1            | 130        | 9/22/2009 8:46   | 41 39.8462 | 70 55.0984 | 0.9       |
| 5015         | 1            | 131        | 9/23/2009 8:05   | 41 39.8409 | 70 54.9752 | 1.8       |
| 5016         | 1            | 134        | 9/23/2009 15:32  | 41 39.7572 | 70 55.0412 | 1.9       |
| 5017         | 1            | 135        | 9/23/2009 13:35  | 41 39.7751 | 70 54.9220 | 1.2       |
| 5018         | 1            | 138        | 9/22/2009 10:15  | 41 39.6779 | 70 55.2325 | 1.5       |
| 5019         | 1            | 139        | 9/24/2009 18:46  | 41 39.6767 | 70 55.1083 | 1.2       |
| 5020         | 1            | 140        | 9/24/2009 16:32  | 41 39.6748 | 70 54.9790 | 2.6       |
| 5021         | 1            | 146        | 9/24/2009 7:41   | 41 39.5936 | 70 55.0413 | 3.2       |
| 5080         | 1            | 146 (dup)  | 9/24/2009 7:41   | 41 39.5936 | 70 55.0413 | 3.2       |
| 5022         | 1            | 147        | 9/22/2009 14:42  | 41 39.5920 | 70 54.9165 | 0.9       |
| 5023         | 1            | 150        | 9/23/2009 16:43  | 41 39.5120 | 70 55.1053 | 2.6       |
| 5024         | 1            | 151        | 9/22/2009 16:13  | 41 39.5113 | 70 54.9801 | 1.2       |
| 5025         | 1            | 152        | 9/22/2009 13:16  | 41 39.5111 | 70 54.8548 | 1.7       |
| 5026         | 1            | 154        | 9/27/2009 7:55   | 41 39.4296 | 70 55.0458 | 6.1       |
| 5027         | 1            | 155        | 9/22/2009 11:27  | 41 39.4271 | 70 54.9187 | 1.2       |
| 5028         | 1            | 202        | 9/26/2009 16:55  | 41 39.3218 | 70 55.0260 | 5.9       |
| 5029         | 1            | 204        | 9/27/2009 14:58  | 41 39.1569 | 70 55.1560 | 7.8       |
| 5030         | 1            | 207        | 9/27/2009 13:24  | 41 38.9941 | 70 55.2776 | 1.7       |
| 5031         | 1            | 208        | 9/26/2009 15:01  | 41 38.9950 | 70 55.0322 | 1.9       |
| 5032         | 1            | 211        | 9/27/2009 13:22  | 41 38.8300 | 70 55.1581 | 3.4       |
| 5033         | 1            | 212        | 9/27/2009 13:34  | 41 38.8277 | 70 54.9026 | 3.2       |
| 5081         | 1            | 212 (dup)  | 9/27/2009 13:34  | 41 38.8277 | 70 54.9026 | N/A       |
| 5034         | 1            | 216        | 9/27/2009 12:08  | 41 38.6653 | 70 55.0312 | 3.0       |
| 5035         | 1            | 217        | 9/26/2009 12:36  | 41 38.6652 | 70 54.7812 | 3.4       |
| 5036         | 1            | 218        | 9/26/2009 11:19  | 41 38.6566 | 70 54.5320 | 0.9       |
| 5037         | 1            | 220        | 9/27/2009 11:06  | 41 38.5026 | 70 55.1600 | 10.7      |
| 5038         | 1            | 221        | 9/26/2009 8:46   | 41 38.5061 | 70 54.8995 | 1.3       |
| 5039         | 1            | 222        | 9/26/2009 9:53   | 41 38.5010 | 70 54.6527 | 3.4       |
| 5040         | 1            | 224        | 9/25/2009 8:00   | 41 38.3455 | 70 55.2815 | 9.8       |
| 5041         | 1            | 225        | 9/25/2009 12:12  | 41 38.3379 | 70 55.0353 | 10.0      |
| 5042         | 1            | 226        | 9/25/2009 9:38   | 41 38.3367 | 70 54.7827 | 3.3       |
| 5043         | 1            | 227        | 9/25/2009 10:51  | 41 38.3397 | 70 54.5296 | 2.2       |
| 5044         | 1            | 230        | 9/25/2009 10:47  | 41 38.1756 | 70 55.1657 | 7.9       |
| 5045         | 1            | 231        | 9/25/2009 10:00  | 41 38.1730 | 70 54.9107 | 8.5       |

| Event Number | Visit Number | Station ID | Sample Date/Time | Latitude   | Longitude  | Depth (m) |
|--------------|--------------|------------|------------------|------------|------------|-----------|
| 5046         | 1            | 235        | 9/25/2009 13:17  | 41 38.0097 | 70 55.0372 | 8.9       |
| 5047         | 1            | 236        | 9/25/2009 14:36  | 41 38.0084 | 70 54.7846 | 10.1      |
| 5048         | 1            | 237        | 9/25/2009 12:16  | 41 38.0080 | 70 54.5326 | 6.4       |
| 5049         | 1            | 240        | 9/25/2009 15:38  | 41 37.8450 | 70 54.9128 | 8.9       |
| 5050         | 1            | 241        | 9/25/2009 7:59   | 41 37.8429 | 70 54.6615 | 10.3      |
| 5051         | 1            | 242        | 9/25/2009 13:48  | 41 37.8436 | 70 54.4068 | 6.5       |
| 5052         | 1            | 245        | 9/25/2009 14:59  | 41 37.6823 | 70 54.7865 | 4.3       |
| 5053         | 1            | 247        | 9/25/2009 16:25  | 41 37.6782 | 70 54.2829 | 3.4       |
| 5054         | 1            | 249        | 9/25/2009 17:19  | 41 37.5167 | 70 54.6638 | 2.2       |
| 5055         | 1            | 250        | 9/27/2009 9:39   | 41 37.5175 | 70 54.4131 | 12.2      |
| 5056         | 1            | 253        | 9/27/2009 8:09   | 41 37.3518 | 70 54.7924 | 2.9       |
| 5057         | 1            | 304        | 9/25/2009 16:44  | 41 37.1566 | 70 54.5388 | 3.4       |
| 5058         | 1            | 306        | 9/28/2009 8:55   | 41 37.1459 | 70 52.2575 | 2.7       |
| 5059         | 1            | 309        | 9/26/2009 14:30  | 41 36.4190 | 70 55.1179 | 5.4       |
| 5060         | 1            | 310        | 9/28/2009 9:58   | 41 36.4133 | 70 53.9765 | 5.8       |
| 5061         | 1            | 311        | 9/26/2009 16:45  | 41 36.4070 | 70 52.8356 | 5.3       |
| 5062         | 1            | 317        | 9/28/2009 8:02   | 41 35.6674 | 70 53.4134 | 9.1       |
| 5063         | 1            | 318        | 9/26/2009 15:50  | 41 35.6630 | 70 52.2728 | 6.5       |
| 5064         | 1            | 323        | 9/26/2009 12:50  | 41 34.9364 | 70 55.1318 | 8.3       |
| 5082         | 1            | 323 (dup)  | 9/26/2009 12:50  | 41 34.9364 | 70 55.1318 | 8.3       |
| 5065         | 1            | 324        | 9/26/2009 11:50  | 41 34.9296 | 70 53.9892 | 9.8       |
| 5066         | 1            | 325        | 9/26/2009 8:25   | 41 34.9243 | 70 52.8491 | 10.1      |
| 5067         | 1            | 331        | 9/24/2009 16:08  | 41 34.1976 | 70 55.7074 | 7.6       |
| 5068         | 1            | 332        | 9/24/2009 14:51  | 41 34.1910 | 70 54.5683 | 8.7       |
| 5069         | 1            | 333        | 9/24/2009 13:30  | 41 34.1832 | 70 53.4269 | 6.9       |
| 5070         | 1            | 334        | 9/24/2009 11:31  | 41 34.1786 | 70 52.2873 | 11.6      |
| 5071         | 1            | 335        | 9/24/2009 0:00   | 41 34.1752 | 70 51.1441 | 8.1       |
| 5072         | 1            | 338        | 9/23/2009 15:55  | 41 33.4537 | 70 55.1435 | 8.3       |
| 5073         | 1            | 339        | 9/23/2009 17:18  | 41 33.4475 | 70 54.0036 | 11.4      |
| 5074         | 1            | 340        | 9/23/2009 13:30  | 41 33.4417 | 70 52.8642 | 11.9      |
| 5075         | 1            | 341        | 9/23/2009 11:22  | 41 33.4350 | 70 51.7242 | 11.9      |
| 5076         | 1            | 345        | 9/23/2009 9:25   | 41 32.7092 | 70 54.5811 | 11.0      |
| 5077         | 1            | 346        | 9/22/2009 15:37  | 41 32.7029 | 70 53.4406 | 10.8      |
| 5078         | 1            | 349        | 9/22/2009 12:21  | 41 31.9743 | 70 56.2948 | 8.5       |
| 5079         | 1            | 352        | 9/22/2009 9:05   | 41 31.2382 | 70 56.8750 | 7.0       |

**APPENDIX D. WATER QUALITY DATA FROM THE 2009 NB  
LTM V SURVEY**

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*Woods Hole Group*

| Event Number | Visit Number | Station ID | Sample Date/Time | Depth of In Situ Measurements (m) | Dissolved Oxygen (mg/L) | Salinity (ppt) | Temperature (°C) |
|--------------|--------------|------------|------------------|-----------------------------------|-------------------------|----------------|------------------|
| 5001         | 1            | 105        | 9/24/2009 11:04  | 0.46                              | 6.4                     | 26.4           | 21.23            |
| 5002         | 1            | 108        | 9/24/2009 9:56   | 0.13                              | 6.66                    | 21.43          | 21.15            |
| 5003         | 1            | 109        | 9/24/2009 12:00  | 0.33                              | 7.14                    | 26.52          | 21.42            |
| 5004         | 1            | 111        | 9/24/2009 14:16  | 1.46                              | 7.77                    | 30.79          | 21.01            |
| 5005         | 1            | 114        | 9/24/2009 15:16  | 1.2                               | 8.21                    | 30.54          | 21.05            |
| 5006         | 1            | 115        | 9/24/2009 13:09  | 0.37                              | 8.23                    | 27.65          | 21.64            |
| 5007         | 1            | 117        | 9/27/2009 11:27  | 0.59                              | 8.86                    | 21.69          | 18.8             |
| 5008         | 1            | 120        | 9/27/2009 9:57   | 0.3                               | 8.8                     | 21.94          | 18.76            |
| 5009         | 1            | 121        | 9/27/2009 10:49  | 0.21                              | 8.52                    | 21.86          | 19.11            |
| 5010         | 1            | 123        | 9/27/2009 8:57   | 0.91                              | 7.81                    | 22.26          | 19.08            |
| 5011         | 1            | 125        | 9/23/2009 12:18  | 3                                 | 8.16                    | 25.83          | 20.02            |
| 5012         | 1            | 126        | 9/23/2009 10:50  | 0.1                               | 9.38                    | 23.96          | 20.47            |
| 5013         | 1            | 128        | 9/23/2009 9:39   | 2                                 | 7.64                    | 25.82          | 19.99            |
| 5014         | 1            | 130        | 9/22/2009 8:46   | 0.15                              | 8.03                    | 27.56          | 19.88            |
| 5015         | 1            | 131        | 9/23/2009 8:05   | 1                                 | 8.09                    | 25.11          | 20.09            |
| 5016         | 1            | 134        | 9/23/2009 15:32  | 1                                 | 10.09                   | 25.08          | 20.71            |
| 5017         | 1            | 135        | 9/23/2009 13:35  | 0.33                              | 9.26                    | 25.34          | 20.7             |
| 5018         | 1            | 138        | 9/22/2009 10:15  | 0.5                               | 7.1                     | 29.26          | 19.63            |
| 5019         | 1            | 139        | 9/24/2009 18:46  | 0.32                              | 7.31                    | 30.05          | 20.83            |
| 5020         | 1            | 140        | 9/24/2009 16:32  | 1.71                              | 7.6                     | 31.33          | 20.57            |
| 5021         | 1            | 146        | 9/24/2009 7:41   | 2.22                              | 6.77                    | 31.25          | 20.58            |
| 5080         | 1            | 146 (dup)  | 9/24/2009 7:41   | 2.22                              | 6.77                    | 31.25          | 20.58            |
| 5022         | 1            | 147        | 9/22/2009 14:42  | 0.25                              | 10.6                    | 28.41          | 20.81            |
| 5023         | 1            | 150        | 9/23/2009 16:43  | 1.75                              | 9.96                    | 25.78          | 20.69            |
| 5024         | 1            | 151        | 9/22/2009 16:13  | 0.33                              | 9.9                     | 27.99          | 20.94            |
| 5025         | 1            | 152        | 9/22/2009 13:16  | 0.75                              | 9.42                    | 28.8           | 20.25            |
| 5026         | 1            | 154        | 9/27/2009 7:55   | 5.1                               | 7.39                    | 23.29          | 18.91            |
| 5027         | 1            | 155        | 9/22/2009 11:27  | 0.33                              | 9.5                     | 28.62          | 20.24            |
| 5028         | 1            | 202        | 9/26/2009 16:55  | 4.98                              | 8.33                    | 27.74          | 19.83            |
| 5029         | 1            | 204        | 9/27/2009 14:58  | 6.49                              | 7.53                    | 23.57          | 18.58            |
| 5030         | 1            | 207        | 9/27/2009 13:24  | 0.76                              | 7.76                    | 23.4           | 18.14            |
| 5031         | 1            | 208        | 9/26/2009 15:01  | 0.89                              | 10.41                   | 27.33          | 19.84            |
| 5032         | 1            | 211        | 9/27/2009 13:22  | 2.72                              | 7.04                    | 25.7           | 18.8             |
| 5033         | 1            | 212        | 9/27/2009 13:34  | 2.33                              | 8.13                    | 27.94          | 19.41            |
| 5081         | 1            | 212 (dup)  | 9/27/2009 13:34  | 2.33                              | 8.13                    | 27.94          | 19.41            |
| 5034         | 1            | 216        | 9/27/2009 12:08  | 2.69                              | 6.33                    | 25.96          | 19.16            |
| 5035         | 1            | 217        | 9/26/2009 12:36  | 2.56                              | 8.41                    | 27.87          | 18.93            |
| 5036         | 1            | 218        | 9/26/2009 11:19  | 0.09                              | 8.37                    | 27.8           | 18.96            |
| 5037         | 1            | 220        | 9/27/2009 11:06  | 10.32                             | 5.51                    | 26.42          | 19.44            |
| 5038         | 1            | 221        | 9/26/2009 8:46   | 0.36                              | 7.6                     | 27.79          | 18.72            |
| 5039         | 1            | 222        | 9/26/2009 9:53   | 2.57                              | 7.16                    | 27.97          | 18.72            |
| 5040         | 1            | 224        | 9/25/2009 8:00   | 8.05                              | 5.89                    | 27.18          | 19.83            |
| 5041         | 1            | 225        | 9/25/2009 12:12  | 9.83                              | 6.44                    | 26.85          | 19.9             |
| 5042         | 1            | 226        | 9/25/2009 9:38   | 2.37                              | 6.66                    | 27.09          | 20.05            |
| 5043         | 1            | 227        | 9/25/2009 10:51  | 1.27                              | 6.88                    | 26.59          | 19.88            |
| 5044         | 1            | 230        | 9/25/2009 10:47  | 7.46                              | 6.58                    | 26.75          | 19.89            |
| 5045         | 1            | 231        | 9/25/2009 10:00  | 7.86                              | 6.31                    | 26.83          | 19.91            |
| 5046         | 1            | 235        | 9/25/2009 13:17  | 8.42                              | 6.45                    | 26.88          | 19.79            |
| 5047         | 1            | 236        | 9/25/2009 14:36  | 9.56                              | 7.65                    | 26.9           | 19.74            |
| 5048         | 1            | 237        | 9/25/2009 12:16  | 5.52                              | 6.78                    | 27.08          | 19.85            |
| 5049         | 1            | 240        | 9/25/2009 15:38  | 8.42                              | 7.07                    | 26.83          | 19.77            |
| 5050         | 1            | 241        | 9/25/2009 7:59   | 9.53                              | 6.24                    | 26.84          | 19.91            |
| 5051         | 1            | 242        | 9/25/2009 13:48  | 5.43                              | 7.12                    | 27.22          | 19.78            |

| Event Number | Visit Number | Station ID | Sample Date/Time | Depth of In Situ Measurements (m) | Dissolved Oxygen (mg/L) | Salinity (ppt) | Temperature (°C) |
|--------------|--------------|------------|------------------|-----------------------------------|-------------------------|----------------|------------------|
| 5052         | 1            | 245        | 9/25/2009 14:59  | 3.56                              | 7.93                    | 26.72          | 19.98            |
| 5053         | 1            | 247        | 9/25/2009 16:25  | 2.63                              | 8.62                    | 26.98          | 20.05            |
| 5054         | 1            | 249        | 9/25/2009 17:19  | 1.28                              | 8.42                    | 26.75          | 19.89            |
| 5055         | 1            | 250        | 9/27/2009 9:39   | 9.92                              | 6.54                    | 26.4           | 18.73            |
| 5056         | 1            | 253        | 9/27/2009 8:09   | 2.61                              | 6.56                    | 26.32          | 18.83            |
| 5057         | 1            | 304        | 9/25/2009 16:44  | 2.88                              | 8.06                    | 26.89          | 19.79            |
| 5058         | 1            | 306        | 9/28/2009 8:55   | 1.48                              | 7.2                     | 27.75          | 18.12            |
| 5059         | 1            | 309        | 9/26/2009 14:30  | N/A                               | N/A                     | N/A            | N/A              |
| 5060         | 1            | 310        | 9/28/2009 9:58   | 4.63                              | 6.69                    | 28.33          | 18.63            |
| 5061         | 1            | 311        | 9/26/2009 16:45  | N/A                               | N/A                     | N/A            | N/A              |
| 5062         | 1            | 317        | 9/28/2009 8:02   | 8.58                              | 6.87                    | 28.38          | 18.45            |
| 5063         | 1            | 318        | 9/26/2009 15:50  | N/A                               | N/A                     | N/A            | N/A              |
| 5064         | 1            | 323        | 9/26/2009 12:50  | N/A                               | N/A                     | N/A            | N/A              |
| 5082         | 1            | 323 (dup)  | 9/26/2009 12:50  | N/A                               | N/A                     | N/A            | N/A              |
| 5065         | 1            | 324        | 9/26/2009 11:50  | N/A                               | N/A                     | N/A            | N/A              |
| 5066         | 1            | 325        | 9/26/2009 8:25   | 9.62                              | 6.84                    | 33.37          | 18.86            |
| 5067         | 1            | 331        | 9/24/2009 16:08  | 6.78                              | 7.13                    | 27.96          | 19.18            |
| 5068         | 1            | 332        | 9/24/2009 14:51  | 8.12                              | 7.17                    | 27.96          | 19.14            |
| 5069         | 1            | 333        | 9/24/2009 13:30  | 6.05                              | 7.22                    | 27.97          | 19.12            |
| 5070         | 1            | 334        | 9/24/2009 11:31  | 10.95                             | 7.13                    | 27.95          | 18.88            |
| 5071         | 1            | 335        | 9/24/2009 0:00   | 7.29                              | 7.31                    | 27.75          | 19.45            |
| 5072         | 1            | 338        | 9/23/2009 15:55  | 7.55                              | 7.23                    | 31.72          | 19.06            |
| 5073         | 1            | 339        | 9/23/2009 17:18  | 10.67                             | 7.14                    | 31.86          | 18.97            |
| 5074         | 1            | 340        | 9/23/2009 13:30  | 11.09                             | 7.1                     | 31.87          | 18.8             |
| 5075         | 1            | 341        | 9/23/2009 11:22  | 11.5                              | 7.41                    | 31.85          | 18.79            |
| 5076         | 1            | 345        | 9/23/2009 9:25   | 12.02                             | 7.27                    | 31.74          | 18.96            |
| 5077         | 1            | 346        | 9/22/2009 15:37  | 10.37                             | 7.67                    | 31.38          | 18.79            |
| 5078         | 1            | 349        | 9/22/2009 12:21  | 7.4                               | 7.47                    | 31.3           | 18.89            |
| 5079         | 1            | 352        | 9/22/2009 9:05   | 6.55                              | 7.45                    | 31.31          | 18.91            |

**APPENDIX E. PCB DATA FROM THE 2009 NBH LTM V SURVEY**

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| Sample ID | Station ID | QC Code     | ug/kg | Qual | 2,3',4,4',5'-Pentachlorobiphenyl | Qual | 2,3',4,4',5'-Tetrachlorobiphenyl | Qual | 2,3',3',4,4',5'-Pentachlorobiphenyl | Qual | 2,4'-Dichlorobiphenyl | Qual | 2,2',4,4',5',5'-Hexachlorobiphenyl | Qual | 2,2',3,3',4,4',5'-Hexachlorobiphenyl | Qual | 2,2',3,3',4,4',5,5'-Heptachlorobiphenyl | Qual | 2,2',3,3',4,4',5'-Heptachlorobiphenyl | Qual | 2,2',5,5',5'-Tetrachlorobiphenyl | Qual | 2,2',5'-Trichlorobiphenyl | Qual | 2,2',4,5,5'-Pentachlorobiphenyl | Qual | 2,2',3,3',4,4',5'-Hexachlorobiphenyl | Qual | 2,2',3,3',4,4',5,5',6'-Nonachlorobiphenyl | Qual | 2,2',3,3',5'-Tetrachlorobiphenyl | Qual | 2,2',3,3',4,4',5,5',6'-Heptachlorobiphenyl | Qual | 2,2',3,3',4,4',5,6-Octachlorobiphenyl | Qual | 2,4,4'-Trichlorobiphenyl | Qual | Total PCB | Qual |
|-----------|------------|-------------|-------|------|----------------------------------|------|----------------------------------|------|-------------------------------------|------|-----------------------|------|------------------------------------|------|--------------------------------------|------|---|------|---------------------------------------|------|----------------------------------|------|---------------------------|------|---------------------------------|------|--------------------------------------|------|---|------|----------------------------------|------|--|------|---------------------------------------|------|--------------------------|------|-----------|------|
| 500125    | 105-09LTM  | SADL1       | 341   | DUJ  | 4070                             | D    | 2580                             | D    | 259                                 | DJ   | 17200                 | D    | 4140                               | D    | 5880                                 | D    | 681                                     | D    | 865                                   | D    | 72800                            | D    | 39800                     | D    | 3970                            | D    | 981                                  | D    | 306                                       | DJ   | 17500                            | D    | 1390                                       | D    | 341                                   | DU   | 30500                    | D    | 203604    |      |
| 500225    | 108-09LTM  | SADL1       | 170   | DUJ  | 2580                             | D    | 1010                             | D    | 177                                 | D    | 4660                  | D    | 2210                               | D    | 3330                                 | D    | 623                                     | D    | 481                                   | D    | 41200                            | D    | 22200                     | D    | 4220                            | D    | 170                                  | DU   | 10100                                     | D    | 908                              | D    | 170  | DU   | 19300                                 | D    | 113679                   |      |           |      |
| 500325    | 109-09LTM  | SADL1       | 171   | DUJ  | 2560                             | D    | 768                              | D    | 184                                 | D    | 1770                  | D    | 2380                               | D    | 2940                                 | D    | 398                                     | D    | 319                                   | D    | 32400                            | D    | 14700                     | D    | 3410                            | D    | 562                                  | D    | 171                                       | DU   | 7360                             | D    | 736  | D    | 171                                   | DU   | 19600                    | D    | 90600     |      |
| 500425    | 111-09LTM  | SADL1       | 170   | DUJ  | 2900                             | D    | 818                              | D    | 153                                 | DJ   | 3550                  | D    | 2920                               | D    | 3180                                 | D    | 395                                     | D    | 518                                   | D    | 37400                            | D    | 20000                     | D    | 5180                            | D    | 562                                  | D    | 170                                       | DU   | 8840                             | D    | 642  | D    | 170                                   | DU   | 19000                    | D    | 106568    |      |
| 500525    | 114-09LTM  | SADL1       | 172   | DUJ  | 4190                             | D    | 1320                             | D    | 247                                 | D    | 3140                  | D    | 4140                               | D    | 4220                                 | D    | 764                                     | D    | 518                                   | D    | 38400                            | D    | 19600                     | D    | 6930                            | D    | 875                                  | D    | 172                                       | DU   | 9030                             | D    | 807  | D    | 172                                   | DU   | 23700                    | D    | 118397    |      |
| 500625    | 115-09LTM  | SADL1       | 170   | DUJ  | 4390                             | D    | 1100                             | D    | 310                                 | D    | 2080                  | D    | 4210                               | D    | 5030                                 | D    | 674                                     | D    | 832                                   | D    | 40700                            | D    | 15100                     | D    | 6040                            | D    | 1020                                 | D    | 170                                       | DU   | 9050                             | D    | 917  | D    | 170                                   | DU   | 24600                    | D    | 116563    |      |
| 500725    | 117-09LTM  | SADL1       | 343   | DUJ  | 4300                             | D    | 1040                             | D    | 343                                 | DU   | 14600                 | D    | 5470                               | D    | 4500                                 | D    | 397                                     | D    | 397                                   | D    | 98500                            | D    | 65800                     | D    | 10000                           | D    | 343                                  | DU   | 343                                       | DU   | 11100                            | D    | 1110                                       | D    | 343                                   | DU   | 51000                    | D    | 269929    |      |
| 500825    | 120-09LTM  | SADL1       | 71.1  | DUJ  | 4740                             | D    | 1480                             | D    | 357                                 | D    | 2140                  | D    | 3410                               | D    | 3990                                 | D    | 535                                     | D    | 506                                   | D    | 24800                            | D    | 11300                     | D    | 7210                            | D    | 746                                  | D    | 71.1                                      | DU   | 8080                             | D    | 586  | D    | 71.1                                  | DU   | 19900                    | D    | 89993     |      |
| 500925    | 121-09LTM  | SADL1       | 68.8  | DUJ  | 3640                             | D    | 850                              | D    | 178                                 | D    | 1830                  | D    | 2800                               | D    | 3050                                 | D    | 467                                     | D    | 487                                   | D    | 25400                            | D    | 12100                     | D    | 4950                            | D    | 556                                  | D    | 68.8                                      | DU   | 5870                             | D    | 626  | D    | 68.8                                  | DU   | 17100                    | D    | 80110     |      |
| 501025    | 123-09LTM  | SADL1       | 68.6  | DUJ  | 4150                             | D    | 1240                             | D    | 228                                 | D    | 2430                  | D    | 3240                               | D    | 3470                                 | D    | 635                                     | D    | 532                                   | D    | 25800                            | D    | 14400                     | D    | 6750                            | D    | 542                                  | D    | 68.6                                      | DU   | 7620                             | D    | 716  | D    | 68.6                                  | DU   | 20400                    | D    | 92359     |      |
| 501125    | 125-09LTM  | SADL1       | 345   | DUJ  | 7950                             | D    | 2800                             | D    | 506                                 | D    | 17100                 | D    | 6920                               | D    | 9800                                 | D    | 1700                                    | D    | 1670                                  | D    | 98900                            | D    | 66400                     | D    | 12100                           | D    | 1520                                 | D    | 345                                       | DU   | 27700                            | D    | 1770                                       | D    | 345                                   | DU   | 73100                    | D    | 330971    |      |
| 501225    | 126-09LTM  | SADL1       | 3.34  | DUJ  | 371                              | DK   | 143                              | DK   | 42                                  | DK   | 126                   | DK   | 236                                | DK   | 292                                  | DK   | 47                                      | DK   | 39                                    | DK   | 1647                             | DK   | 743                       | DK   | 606                             | DK   | 53                                   | DK   | 6.6                                       | DK   | 435                              | DK   | 39   | DK   | 3.34                                  | DU   | 1232                     | DK   | 6064      | K    |
| 501325    | 128-09LTM  | SADL1       | 36    | DU   | 2630                             | D    | 807                              | D    | 256                                 | D    | 811                   | D    | 1720                               | D    | 2120                                 | D    | 343                                     | D    | 313                                   | D    | 12500                            | DJ   | 5600                      | D    | 3690                            | D    | 414                                  | D    | 36  | DU   | 4130                             | D    | 286  | D    | 36                                    | DU   | 9890                     | DJ   | 45618     |      |
| 501425    | 130-09LTM  | SADL1       | 6.7   | DUJ  | 875                              | DK   | 348                              | DK   | 95                                  | DK   | 209                   | DK   | 488                                | DK   | 720                                  | DK   | 120                                     | DK   | 99                                    | DK   | 3365                             | DK   | 1271                      | DK   | 1224                            | DK   | 152                                  | DK   | 10  | DK   | 1049                             | DK   | 85   | DK   | 6                                     | DJK  | 2612                     | DK   | 12735     | K    |
| 501525    | 131-09LTM  | SADL1       | 33.9  | DUJ  | 2300                             | D    | 607                              | D    | 215                                 | D    | 653                   | D    | 1440                               | D    | 1940                                 | D    | 275                                     | D    | 287                                   | D    | 8910                             | D    | 3750                      | D    | 2920                            | D    | 383                                  | D    | 30.8                                      | DJ   | 2740                             | D    | 266  | D    | 33.9                                  | DU   | 5700                     | D    | 32485     |      |
| 501625    | 134-09LTM  | SADL1       | 67.9  | DUJ  | 3270                             | D    | 1140                             | D    | 307                                 | D    | 697                   | D    | 1840                               | D    | 2610                                 | D    | 324                                     | D    | 277                                   | D    | 11300                            | D    | 4560                      | D    | 3890                            | D    | 518                                  | D    | 67.9                                      | DU   | 3950                             | D    | 304  | D    | 67.9                                  | DU   | 12700                    | D    | 47891     |      |
| 501725    | 135-09LTM  | SADL1       | 1.67  | DU   | 113                              | DK   | 68                               | DK   | 12                                  | DK   | 30                    | DK   | 71                                 | DK   | 89                                   | DK   | 15                                      | DK   | 14                                    | DK   | 617                              | DKJ  | 181                       | DK   | 212                             | DK   | 3.4                                  | DK   | 1.67                                      | DU   | 168                              | DK   | 13   | DK   | 1.67                                  | DU   | 404                      | DKJ  | 2015      | K    |
| 501825    | 138-09LTM  | SADL1       | 19.7  | DU   | 3180                             | D    | 736                              | D    | 532                                 | D    | 325                   | D    | 1470                               | D    | 2430                                 | D    | 366                                     | D    | 324                                   | D    | 6300                             | DJ   | 2080                      | D    | 3540                            | D    | 532                                  | D    | 19.7                                      | DU   | 2610                             | D    | 276  | D    | 19.7                                  | DU   | 5080                     | DJ   | 29840     |      |
| 501925    | 139-09LTM  | SADL1       | 36.2  | DU   | 2370                             | D    | 672                              | D    | 246                                 | D    | 397                   | D    | 1440                               | D    | 2040                                 | D    | 268                                     | D    | 301                                   | D    | 7870                             | DJ   | 2500                      | D    | 2670                            | D    | 472                                  | D    | 36.2                                      | DU   | 2690                             | D    | 230  | D    | 36.2                                  | DU   | 5260                     | DJ   | 29535     |      |
| 502025    | 140-09LTM  | SADL1       | 19.1  | DU   | 2050                             | D    | 642                              | D    | 234                                 | D    | 329                   | D    | 1180                               | D    | 1640                                 | D    | 267                                     | D    | 228                                   | D    | 6220                             | DJ   | 2180                      | D    | 2360                            | D    | 366                                  | D    | 19.1                                      | DU   | 2150                             | D    | 251  | D    | 19.1                                  | DU   | 4450                     | DJ   | 24604     |      |
| 502125    | 146-09LTM  | SADL1       | 3.49  | DU   | 609                              | DK   | 154                              | DK   | 116                                 | DK   | 90                    | DK   | 358                                | DK   | 513                                  | DK   | 89                                      | DK   | 78                                    | DK   | 1738                             | DKJ  | 621                       | DK   | 886                             | DK   | 102                                  | DK   | 3.49                                      | DU   | 654                              | DK   | 77   | DK   | 3.49                                  | DU   | 1750                     | DKJ  | 7845      | K    |
| 508035    | 146-09LTM  | SADL1 (REP) | 6.99  | DU   | 699                              | D    | 223                              | D    | 80.9                                | D    | 111                   | D    | 389                                | D    | 546                                  | D    | 89.8                                    | D    | 90.6                                  | D    | 2120                             | DJ   | 795                       | D    | 1020                            | D    | 121                                  | D    | 6.99                                      | DU   | 696                              | D    | 85.8                                       | D    | 6.99                                  | DU   | 1470                     | DJ   | 8558      |      |
| 502225    | 147-09LTM  | SADL1       | 3.32  | DU   | 440                              | DK   | 198                              | DK   | 48.9                                | DK   | 114                   | DK   | 385                                | DK   | 373                                  | DK   | 62.3                                    | DK   | 50.8                                  | DK   | 2200                             | DKJ  | 698                       | DK   | 975                             | DK   | 78.6                                 | DK   | 3.32                                      | DU   | 691                              | DK   | 61.5                                       | DK   | 3.32                                  | DU   | 2145                     | DKJ  | 8531      | K    |
| 502325    | 150-09LTM  | SADL1       | 19.2  | DU   | 1620                             | D    | 574                              | D    | 242                                 | D    | 232                   | D    | 882                                | D    | 1280                                 | D    | 194                                     | D    | 192                                   | D    | 4460                             | DJ   | 1580                      | D    | 2340                            | D    | 258                                  | D    | 19.2                                      | DU   | 1600                             | D    | 193  | D    | 19.2                                  | DU   | 3780                     | DJ   | 19485     |      |
| 502425    | 151-09LTM  | SADL1       | 3.6   | DUJ  | 390                              | DKJ  | 114                              | DKJ  | 62.2                                | DKJ  | 57.6                  | DKJ  | 234                                | DKJ  | 312                                  | DKJ  | 46.6                                    | DKJ  | 44.1                                  | DKJ  | 1197                             | DKJ  | 399                       | DKJ  | 560                             | DKJ  | 67.4                                 | DKJ  | 3.6                                       | DUJ  | 400                              | DKJ  | 45.9                                       | DKJ  | 3.6                                   | DUJ  | 1149                     | DKJ  | 5090      | K    |
| 502525    | 152-09LTM  | SADL1       | 18.2  | DU   | 1200                             | D    | 310                              | D    | 102                                 | D    | 251                   | D    | 833                                | D    | 1130                                 | D    | 186                                     | D    | 164                                   | D    | 4940                             | DJ   | 1490                      | D    | 1330                            | D    | 233                                  | D    | 18.2                                      | DU   | 2510                             | D    | 195  | D    | 18.2                                  | DU   | 3170                     | DJ   | 18099     |      |
| 502625    | 154-09LTM  | SA          | 0.264 | KJ   | 50                               | KJ   | 18                               | KJ   | 6.6                                 | KJ   | 6.2                   | KJ   | 32                                 | KJ   | 43                                   | KJ   | 4.9                                     | KJ   | 4                                     | KJ   | 151                              | KJ   | 57                        | KJ   | 55                              | KJ   | 8.3                                  | KJ   | 0.837                                     | KJ   | 53                               | KJ   | 4.9  | KJ   | 0.328                                 | UJ   | 93                       | KJ   | 588       | K    |
| 502725    | 155-09LTM  | SADL1       | 3.41  | DU   | 220                              | DK   | 148                              | DK   | 25.7                                | DK   | 103                   | DK   | 212                                | DK   | 182                                  | DK   | 29.6                                    | DK   | 27.2                                  | DK   | 1706                             | DKJ  | 642                       | DK   | 781                             | DK   | 38.6                                 | DK   | 3.41                                      | DU   | 498                              | DK   | 29.7                                       | DK   | 3.41                                  | DU   | 1775                     | DKJ  | 6428      | K    |
| 502825    | 202-09LTM  | SA          | 0.333 | UJ   | 43                               | K    | 16                               | K    | 8.3                                 | K    | 11                    | K    | 27                                 | K    | 36                                   | K    | 6                                       | K    | 4.5                                   | K    | 140                              | K    | 56                        | K    | 61                              | K    | 7.7                                  | K    | 0.8                                       | K    | 44                               | K    | 5.8  | K    | 0.333                                 | U    | 102                      | K    | 570       | K    |
| 502925    | 204-09LTM  | SADL1       | 6.98  | DU   | 802                              | D    | 173                              | D    | 163                                 | D    | 62.7                  | D    | 404                                | D    | 659                                  | D    | 100                                     | D    | 87.6                                  | D    | 1400                             | DJ   | 409                       | D    | 972                             | D    | 143                                  | D    | 6.98                                      | DU   | 527                              | D    | 90.6                                       | D    | 6.98                                  | DU   | 1620                     | DJ   | 7634      |      |
| 503025    | 207-09LTM  | SADL1       | 6.82  | DU   | 810                              | D    | 229                              | D    | 140                                 | D    | 60.2                  | D    | 414                                | D    | 619                                  | D    | 75.6                                    | D    | 54                                    | D    | 1520                             | DJ   | 468                       | D    | 778                             | D    | 66.1                                 | D    | 6.82                                      | DU   | 478                              | D    | 63.4                                       | D    | 6.82                                  | DU   | 1580                     | DJ   | 7376      |      |
| 503125    | 208-09LTM  | SA          | 0.332 | UJ   | 100                              | KJ   | 23                               | KJ   | 19.3                                | KJ   | 10                    | KJ   | 63                                 | KJ   | 85                                   | KJ   | 13                                      | KJ   | 12.2                                  | KJ   | 196                              | KJ   | 53                        | KJ   | 127                             | KJ   | 18.2                                 | KJ   | 0.332                                     | UJ   | 60                               | KJ   | 11.8                                       | KJ   | 0.332                                 | UJ   | 204                      | KJ   | 996       | K    |
| 503225    | 211-09LTM  | SADL1       | 3.49  | DUJ  | 1339                             | DKJ  | 333                              | DKJ  | 291                                 | DKJ  | 97                    | DKJ  | 661                                | DKJ  | 1053                                 | DKJ  | 152                                     | DKJ  | 142                                   | DKJ  | 2140                             | DKJ  | 709                       | DKJ  | 1684                            | DKJ  | 239                                  | DKJ  | 3.49                                      | DUJ  | 874                              | DKJ  | 129  | DKJ  | 3.49                                  | DUJ  | 2421                     | DKJ  | 12274     | K    |
| 503325    | 212-09LTM  | SADL1       | 3.9   | DK   | 1266                             | DK   | 547                              | DK   | 305                                 | DJK  | 179                   | DK   | 639                                | DK   | 1055                                 | DK   | 142                                     | DK   | 129                                   | DK   | 3414                             | DK   | 1026                      | DK   | 2724                            | DK   | 234                                  | DK   | 4.07                                      | DU   | 1438                             | DK   | 111  | DK   | 4.07                                  | DU   | 3172                     | DK   | 16393     | K    |
| 508135    | 212-09LTM  | SADL1 (REP) | 2.49  | DJK  | 965                              | DK   | 351                              | DK   | 233                                 | DJK  | 117                   | DK   | 610                                | DK   | 796                                  | DK   | 106                                     | DK   | 105                                   | DK   | 2192                             | DK   | 674                       | DK   | 1712                            | DK   | 177                                  | DK   | 8.61                                      | DK   | 921                              | DK   | 82   | DK   | 4.11                                  | DU   | 2493                     | DK   | 11549     | K    |
| 503425    | 216-09LTM  | SADL1       | 0.681 | DU   | 66.3                             | DK   | 23.8                             | DK   | 16.4                                | DJK  | 15.3                  | DK   | 39.7                               | DK   | 58.2                                 | DK   | 10                                      | DK   | 9.1                                   | DK   | 194                              | DK   | 64                        | DK   | 122                             | DK   | 12.5                                 | DK   | 0.681                                     | DU   | 73.8                             | DK   | 9  | DK   | 0.681                                 | DU   | 211                      | DK   | 927       | K    |
| 503525    | 217-09LTM  | SADL1       | 11.7  | DJK  | 2371                             | DJK  | 621                              | DJK  | 630                                 | DJK  | 157                   | DJK  | 1007                               | DJK  | 2014                                 | DJK  | 254                                     | DJK  | 229                                   | DJK  | 2900                             | DJK  | 934                       | DJK  | 2714                            | DJK  | 441                                  | DJK  | 18  | DJK  | 1320                             | DJK  | 174  | DJK  | 4.13                                  | DU   | 2929                     | DJK  | 18729     | K    |
| 503625    | 218-09LTM  | SA          | 0.334 | U    | 32.7                             | K    | 20.6                             | K    | 8.3                                 | JK   | 5.2                   | K    | 18.5                               | K    | 27.9                                 | K    | 3.2                                     | K    | 4.4                                   | K    | 126                              | K    | 38.8                      | K    | 83.1                            | K    | 6.3                                  | K    | 0.334                                     | U    | 36.5                             | K    | 2.7  | K    | 0.334                                 | U    | 147                      | K    | 562       | K    |
| 503725    | 220-09LTM  | SADL1       | 1.79  | DU   | 186                              | DK   | 135                              | DK   | 51                                  | DJK  | 37.1                  | DK   | 109                                | DK   |                                      |      |   |      |                                       |      |                                  |      |                           |      |                                 |      |                                      |      |   |      |                                  |      |  |      |                                       |      |                          |      |           |      |

| Sample ID | Station ID | QC Code  | DecaCB - Homologue | Qual | 2,3',4',4',5'-Pentachlorobiphenyl | Qual | 2,3',4',4'-Tetrachlorobiphenyl | Qual | 2,3,3',4',4',5'-Pentachlorobiphenyl | Qual | 2,4'-Dichlorobiphenyl | Qual | 2,2',4',4',5,5'-Hexachlorobiphenyl | Qual | 2,2',3,3',4',4',5'-Hexachlorobiphenyl | Qual | 2,2',3,3',4',4',5,5'-Heptachlorobiphenyl | Qual | 2,2',3,3',4',4',5'-Heptachlorobiphenyl | Qual | 2,2',5,5'-Tetrachlorobiphenyl | Qual | 2,2',5'-Trichlorobiphenyl | Qual | 2,2',4,5,5'-Pentachlorobiphenyl | Qual | 2,2',3,3',4',4'-Hexachlorobiphenyl | Qual | 2,2',3,3',4',4',5,5',6'-Nonachlorobiphenyl | Qual | 2,2',3,5'-Tetrachlorobiphenyl | Qual | 2,2',3,4',5,5',6'-Heptachlorobiphenyl | Qual | 2,2',3,3',4',4',5,6'-Octachlorobiphenyl | Qual | 2,4,4'-Trichlorobiphenyl | Qual | Total PCB | Qual |
|-----------|------------|----------|--------------------|------|-----------------------------------|------|--------------------------------|------|-------------------------------------|------|-----------------------|------|------------------------------------|------|---------------------------------------|------|--|------|--|------|-------------------------------|------|---------------------------|------|---------------------------------|------|------------------------------------|------|--|------|-------------------------------|------|---------------------------------------|------|---|------|--------------------------|------|-----------|------|
| 505125    | 242-09LTM  | SADL1    | 0.2                | DK   | 148                               | DK   | 57.8                           | DK   | 46.7                                | DK   | 33.2                  | DK   | 63.3                               | DK   | 125                                   | DK   | 13.4                                     | DK   | 16.7                                   | DK   | 281                           | DK   | 107                       | DK   | 240                             | DK   | 27.8                               | DK   | 3.17                                       | DK   | 118                           | DK   | 13.8                                  | DK   | 0.68                                    | DU   | 387                      | DK   | 1683      | K    |
| 505225    | 245-09LTM  | SADL1    | 1.77               | DU   | 251                               | DK   | 99.9                           | DK   | 73.3                                | DK   | 61.5                  | DK   | 123                                | DK   | 230                                   | DK   | 33.8                                     | DK   | 32.6                                   | DK   | 422                           | DK   | 117                       | DK   | 411                             | DK   | 53.8                               | DK   | 1.77                                       | DU   | 149                           | DK   | 22.6                                  | DK   | 1.77                                    | DU   | 577                      | DK   | 2663      | K    |
| 505325    | 247-09LTM  | SADL1    | 1.76               | DU   | 362                               | DKJ  | 105                            | DKJ  | 94.7                                | DKJ  | 86.3                  | DKJ  | 179                                | DKJ  | 286                                   | DKJ  | 46.7                                     | DKJ  | 40.1                                   | DKJ  | 433                           | DKJ  | 126                       | DKJ  | 323                             | DKJ  | 69.7                               | DKJ  | 1.76                                       | DU   | 140                           | DKJ  | 37.8                                  | DKJ  | 1.76                                    | DU   | 667                      | DKJ  | 3002      | K    |
| 505425    | 249-09LTM  | SADL1    | 0.678              | DU   | 137                               | DK   | 50.3                           | DK   | 37.4                                | DK   | 12.1                  | DK   | 98                                 | DK   | 104                                   | DK   | 11.1                                     | DK   | 13.1                                   | DK   | 203                           | DK   | 60.6                      | DK   | 179                             | DK   | 26.7                               | DK   | 0.678                                      | DU   | 70                            | DK   | 12                                    | DK   | 0.678                                   | DU   | 329                      | DK   | 1345      | K    |
| 505525    | 250-09LTM  | SA       | 0.338              | U    | 45.1                              | K    | 13.4                           | K    | 13                                  | K    | 8.04                  | K    | 21.3                               | K    | 39.7                                  | K    | 5.18                                     | K    | 5.37                                   | K    | 88.4                          | K    | 27                        | K    | 71.8                            | K    | 9.69                               | K    | 0.338                                      | U    | 33                            | K    | 4.29                                  | K    | 0.338                                   | U    | 139                      | K    | 525       | K    |
| 505625    | 253-09LTM  | SADL1    | 1.82               | DU   | 728                               | DKJ  | 197                            | DKJ  | 255                                 | DKJ  | 173                   | DKJ  | 282                                | DKJ  | 608                                   | DKJ  | 73.4                                     | DKJ  | 65.9                                   | DKJ  | 757                           | DKJ  | 308                       | DKJ  | 774                             | DKJ  | 139                                | DKJ  | 1.82                                       | DUJ  | 336                           | DKJ  | 52.4                                  | DKJ  | 1.82                                    | DU   | 1111                     | DKJ  | 5865      | K    |
| 505725    | 304-09LTM  | SA       | 0.348              | U    | 95.9                              | K    | 40.9                           | K    | 27.5                                | K    | 50.2                  | K    | 62.4                               | K    | 73.8                                  | K    | 9.02                                     | K    | 9.02                                   | K    | 212                           | K    | 98.6                      | K    | 138                             | K    | 17.9                               | K    | 0.348                                      | U    | 86.3                          | K    | 7.4                                   | K    | 0.348                                   | U    | 201                      | K    | 1131      | K    |
| 505825    | 306-09LTM  | SA       | 0.326              | U    | 0.599                             | K    | 0.229                          | JK   | 0.326                               | U    | 0.322                 | JK   | 0.52                               | K    | 0.452                                 | K    | 0.326                                    | U    | 0.326                                  | U    | 1.14                          | UK   | 0.369                     | UK   | 0.719                           | K    | 0.326                              | U    | 0.504                                      | UK   | 0.326                         | U    | 0.326                                 | U    | 1.18                                    | UK   | 9                        | K    |           |      |
| 505925    | 309-09LTM  | SA       | 0.36               | U    | 39                                | K    | 17.8                           | K    | 11.8                                | K    | 8.59                  | K    | 28                                 | K    | 32.4                                  | K    | 4.25                                     | K    | 2.63                                   | K    | 39.9                          | K    | 12.7                      | K    | 52.2                            | K    | 8.55                               | K    | 0.36                                       | U    | 24.1                          | K    | 3.02                                  | K    | 0.36                                    | U    | 50                       | K    | 336       | K    |
| 506025    | 310-09LTM  | SA       | 0.334              | U    | 49.7                              | K    | 20.6                           | K    | 18.5                                | K    | 35.1                  | K    | 29.8                               | K    | 45.1                                  | K    | 5.19                                     | K    | 4.63                                   | K    | 81.4                          | K    | 37.9                      | K    | 80.1                            | K    | 11                                 | K    | 0.334                                      | U    | 48.2                          | K    | 3.4                                   | K    | 0.334                                   | U    | 105                      | K    | 577       | K    |
| 506125    | 311-09LTM  | SA       | 0.33               | U    | 4.31                              | K    | 1.96                           | K    | 1.24                                | K    | 1.41                  | K    | 3.89                               | K    | 4.26                                  | K    | 0.439                                    | K    | 0.405                                  | K    | 5.91                          | K    | 1.89                      | UK   | 6.34                            | K    | 1.04                               | K    | 0.33                                       | U    | 2.73                          | K    | 0.425                                 | K    | 0.33                                    | U    | 6.59                     | K    | 44        | K    |
| 506225    | 317-09LTM  | SA       | 0.4                | U    | 91.3                              | K    | 28.8                           | K    | 30.8                                | K    | 27.2                  | K    | 38.8                               | K    | 82.8                                  | K    | 9.71                                     | K    | 6.37                                   | K    | 95.9                          | K    | 29.3                      | K    | 115                             | K    | 19.6                               | K    | 0.4  | U    | 45.3                          | K    | 6.39                                  | K    | 0.4                                     | U    | 113                      | K    | 741       | K    |
| 506325    | 318-09LTM  | SA       | 0.333              | U    | 1.6                               | K    | 0.854                          | K    | 0.29                                | JK   | 0.958                 | K    | 1.71                               | K    | 1.52                                  | K    | 0.333                                    | U    | 0.333                                  | U    | 3.28                          | UK   | 1.73                      | UK   | 2.31                            | K    | 0.333                              | U    | 0.333                                      | U    | 0.493                         | UK   | 0.249                                 | JK   | 0.333                                   | U    | 3.28                     | UK   | 20        | K    |
| 506425    | 323-09LTM  | SA       | 0.347              | U    | 20.9                              | KJ   | 9.28                           | K    | 6.91                                | KJ   | 6.26                  | KJ   | 12.3                               | K    | 18.6                                  | KJ   | 2.09                                     | KJ   | 1.7                                    | K    | 19.7                          | KJ   | 7.82                      | KJ   | 18.9                            | KJ   | 5.06                               | K    | 0.347                                      | U    | 12.2                          | KJ   | 1.73                                  | KJ   | 0.347                                   | U    | 26.3                     | KJ   | 171       | K    |
| 508235    | 323-09LTM  | SA (REP) | 0.346              | U    | 37.2                              | KJ   | 15.2                           | K    | 11.6                                | KJ   | 13.5                  | KJ   | 17.1                               | K    | 34.3                                  | KJ   | 4.41                                     | KJ   | 2.09                                   | K    | 51.6                          | KJ   | 24.8                      | KJ   | 47.1                            | KJ   | 8.05                               | K    | 0.346                                      | U    | 24.9                          | KJ   | 3.09                                  | KJ   | 0.346                                   | U    | 74.9                     | KJ   | 371       | K    |
| 506525    | 324-09LTM  | SA       | 0.454              | K    | 108                               | K    | 43.2                           | K    | 29.7                                | K    | 28.6                  | K    | 57.8                               | K    | 93                                    | K    | 11.2                                     | K    | 7.32                                   | K    | 177                           | K    | 69.5                      | K    | 102                             | K    | 22.9                               | K    | 0.767                                      | K    | 87.6                          | K    | 6.43                                  | K    | 0.376                                   | U    | 172                      | K    | 1018      | K    |
| 506625    | 325-09LTM  | SA       | 0.254              | JK   | 40                                | K    | 16.5                           | K    | 13                                  | K    | 18.6                  | K    | 26.6                               | K    | 34.7                                  | K    | 4.45                                     | K    | 2.08                                   | K    | 46.9                          | K    | 19.4                      | K    | 53.2                            | K    | 8.62                               | K    | 0.361                                      | K    | 21.6                          | K    | 2.54                                  | K    | 0.379                                   | U    | 70.5                     | K    | 380       | K    |
| 506725    | 331-09LTM  | SA       | 0.183              | JK   | 22.3                              | K    | 7.86                           | K    | 6.05                                | K    | 9.21                  | K    | 16.4                               | K    | 18.5                                  | K    | 2.56                                     | K    | 1.2                                    | K    | 23.6                          | K    | 9.59                      | K    | 26.6                            | K    | 5.43                               | K    | 0.19                                       | JK   | 11.8                          | K    | 1.68                                  | K    | 0.338                                   | U    | 38.4                     | K    | 202       | K    |
| 506825    | 332-09LTM  | SA       | 0.395              | U    | 6.99                              | K    | 2.43                           | K    | 2.52                                | K    | 2.53                  | K    | 5.6                                | K    | 6.71                                  | K    | 0.632                                    | K    | 0.378                                  | JK   | 7.28                          | K    | 2.6                       | K    | 7.38                            | K    | 2.58                               | K    | 0.395                                      | U    | 3.44                          | K    | 0.479                                 | K    | 0.395                                   | U    | 9.78                     | K    | 63        | K    |
| 506925    | 333-09LTM  | SA       | 0.355              | U    | 13.7                              | K    | 4.61                           | K    | 3.69                                | K    | 3.66                  | K    | 8.25                               | K    | 13.1                                  | K    | 2.06                                     | K    | 0.796                                  | K    | 13.5                          | K    | 4.19                      | K    | 16.1                            | K    | 3.73                               | K    | 0.355                                      | U    | 5.05                          | K    | 1.44                                  | K    | 0.355                                   | U    | 15.8                     | K    | 111       | K    |
| 507025    | 334-09LTM  | SA       | 0.395              | U    | 19.3                              | K    | 6.49                           | K    | 5.68                                | K    | 7.61                  | K    | 9.55                               | K    | 15.1                                  | K    | 2.21                                     | K    | 1.06                                   | K    | 16.9                          | K    | 6.03                      | K    | 18.6                            | K    | 3.68                               | K    | 0.395                                      | U    | 7.61                          | K    | 1.14                                  | K    | 0.395                                   | U    | 29.3                     | K    | 151       | K    |
| 507125    | 335-09LTM  | SA       | 0.393              | JK   | 15.3                              | K    | 5.11                           | K    | 3.74                                | K    | 4.91                  | K    | 12.6                               | K    | 12.9                                  | K    | 1.71                                     | K    | 0.841                                  | K    | 13.9                          | K    | 4.91                      | K    | 15.7                            | K    | 4.46                               | K    | 0.393                                      | U    | 5.92                          | K    | 1.38                                  | K    | 0.393                                   | U    | 20.8                     | K    | 125       | K    |
| 507225    | 338-09LTM  | SA       | 0.349              | U    | 16                                | K    | 5.3                            | K    | 4.63                                | K    | 5.48                  | K    | 13                                 | K    | 15.7                                  | K    | 2.15                                     | K    | 0.918                                  | K    | 17.1                          | K    | 5.56                      | K    | 18.7                            | K    | 4.57                               | K    | 0.349                                      | U    | 6.52                          | K    | 1.59                                  | K    | 0.349                                   | U    | 21                       | K    | 139       | K    |
| 507325    | 339-09LTM  | SA       | 0.367              | U    | 10.4                              | K    | 4.36                           | K    | 3.03                                | K    | 4.1                   | K    | 7.35                               | K    | 8.66                                  | K    | 0.8                                      | K    | 0.528                                  | K    | 9.64                          | K    | 3.7                       | K    | 10.5                            | K    | 2.82                               | K    | 0.367                                      | U    | 3.11                          | K    | 0.755                                 | K    | 0.367                                   | U    | 14.3                     | K    | 85        | K    |
| 507425    | 340-09LTM  | SA       | 0.379              | U    | 13.6                              | K    | 4.23                           | K    | 3.82                                | K    | 4.87                  | K    | 10                                 | K    | 11.3                                  | K    | 1.22                                     | K    | 0.82                                   | K    | 11.9                          | K    | 4.77                      | K    | 13.6                            | K    | 3.22                               | K    | 0.379                                      | U    | 4.13                          | K    | 0.971                                 | K    | 0.379                                   | U    | 17.8                     | K    | 107       | K    |
| 507525    | 341-09LTM  | SA       | 0.328              | U    | 2.52                              | K    | 0.796                          | K    | 0.605                               | K    | 0.912                 | K    | 2.07                               | K    | 2.67                                  | K    | 0.261                                    | JK   | 0.328                                  | U    | 2.66                          | K    | 0.953                     | K    | 2.47                            | K    | 0.328                              | U    | 0.589                                      | K    | 0.216                         | JK   | 0.328                                 | U    | 3.32                                    | K    | 22                       | K    |           |      |
| 507625    | 345-09LTM  | SA       | 0.352              | U    | 11.3                              | K    | 2.84                           | K    | 3.87                                | K    | 4                     | K    | 9.14                               | K    | 10.9                                  | K    | 1.63                                     | K    | 0.596                                  | K    | 10.4                          | K    | 4.15                      | K    | 11.2                            | K    | 4.07                               | K    | 0.352                                      | U    | 1.43                          | K    | 0.622                                 | K    | 0.352                                   | U    | 14.3                     | K    | 92        | K    |
| 507725    | 346-09LTM  | SA       | 0.326              | U    | 1.28                              | K    | 0.454                          | K    | 0.265                               | JK   | 0.657                 | K    | 1.08                               | K    | 1.17                                  | K    | 0.326                                    | U    | 0.326                                  | U    | 1.65                          | K    | 0.661                     | K    | 1.38                            | K    | 0.326                              | U    | 0.326                                      | U    | 0.326                         | U    | 0.326                                 | U    | 0.326                                   | U    | 1.88                     | K    | 13        | K    |
| 507825    | 349-09LTM  | SA       | 0.341              | U    | 1.83                              | K    | 0.81                           | K    | 0.35                                | JK   | 0.341                 | U    | 1.66                               | K    | 1.69                                  | K    | 0.341                                    | U    | 0.341                                  | U    | 2.51                          | UK   | 0.341                     | U    | 1.81                            | UK   | 0.341                              | U    | 0.341                                      | U    | 1.02                          | UK   | 0.266                                 | JK   | 0.341                                   | U    | 0.341                    | U    | 15        | K    |
| 507925    | 352-09LTM  | SA       | 0.336              | U    | 1.91                              | K    | 0.704                          | K    | 0.816                               | K    | 0.717                 | K    | 2.01                               | K    | 2.44                                  | K    | 0.322                                    | JK   | 0.336                                  | U    | 2.51                          | K    | 0.966                     | K    | 2.18                            | K    | 0.451                              | K    | 0.336                                      | U    | 1.24                          | K    | 0.312                                 | JK   | 0.336                                   | U    | 3.11                     | K    | 21        | K    |

**APPENDIX F. TOC DATA FROM THE 2009 NBH LTM V SURVEY**

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|           |            |             | Total Organic Carbon |      |
|-----------|------------|-------------|----------------------|------|
| Sample ID | Station ID | QC Code     | %                    | Qual |
| 500125    | 105-09LTM  | SADL1       | 3.08                 |      |
| 500225    | 108-09LTM  | SADL1       | 4.49                 |      |
| 500325    | 109-09LTM  | SADL1       | 2.34                 |      |
| 500425    | 111-09LTM  | SADL1       | 2.78                 |      |
| 500525    | 114-09LTM  | SADL1       | 1.94                 |      |
| 500625    | 115-09LTM  | SADL1       | 2.17                 |      |
| 500725    | 117-09LTM  | SADL1       | 1.76                 |      |
| 500825    | 120-09LTM  | SADL1       | 3.62                 |      |
| 500925    | 121-09LTM  | SADL1       | 3.42                 |      |
| 501025    | 123-09LTM  | SADL1       | 3.00                 |      |
| 501125    | 125-09LTM  | SADL1       | 5.15                 |      |
| 501225    | 126-09LTM  | SADL1       | 0.490                |      |
| 501325    | 128-09LTM  | SADL1       | 4.33                 |      |
| 501425    | 130-09LTM  | SADL1       | 1.01                 |      |
| 501525    | 131-09LTM  | SADL1       | 1.90                 |      |
| 501625    | 134-09LTM  | SADL1       | 2.36                 |      |
| 501725    | 135-09LTM  | SADL1       | 0.443                |      |
| 501825    | 138-09LTM  | SADL1       | 3.65                 |      |
| 501925    | 139-09LTM  | SADL1       | 4.21                 |      |
| 502025    | 140-09LTM  | SADL1       | 4.14                 |      |
| 502125    | 146-09LTM  | SADL1       | 2.99                 |      |
| 508035    | 146-09LTM  | SADL1 (REP) | 2.52                 |      |
| 502225    | 147-09LTM  | SADL1       | 1.14                 |      |
| 502325    | 150-09LTM  | SADL1       | 3.08                 |      |
| 502425    | 151-09LTM  | SADL1       | 1.15                 |      |
| 502525    | 152-09LTM  | SADL1       | 2.87                 |      |
| 502625    | 154-09LTM  | SA          | 0.378                |      |
| 502725    | 155-09LTM  | SADL1       | 1.33                 |      |
| 502825    | 202-09LTM  | SA          | 0.103                |      |
| 502925    | 204-09LTM  | SADL1       | 2.12                 |      |
| 503025    | 207-09LTM  | SADL1       | 2.64                 |      |
| 503125    | 208-09LTM  | SA          | 0.615                | J    |
| 503225    | 211-09LTM  | SADL1       | 1.90                 |      |
| 503325    | 212-09LTM  | SADL1       | 3.19                 |      |
| 508135    | 212-09LTM  | SADL1 (REP) | 3.55                 |      |
| 503425    | 216-09LTM  | SADL1       | 0.331                |      |
| 503525    | 217-09LTM  | SADL1       | 3.52                 |      |

|           |            |          | Total Organic Carbon |      |
|-----------|------------|----------|----------------------|------|
| Sample ID | Station ID | QC Code  | %                    | Qual |
| 503625    | 218-09LTM  | SA       | 0.426                |      |
| 503725    | 220-09LTM  | SADL1    | 1.39                 |      |
| 503825    | 221-09LTM  | SADL1    | 1.68                 |      |
| 503925    | 222-09LTM  | SADL1    | 1.94                 |      |
| 504025    | 224-09LTM  | SADL1    | 3.82                 |      |
| 504125    | 225-09LTM  | SADL1    | 1.61                 |      |
| 504225    | 226-09LTM  | SADL1    | 3.15                 |      |
| 504325    | 227-09LTM  | SADL1    | 2.45                 |      |
| 504425    | 230-09LTM  | SADL1    | 4.06                 |      |
| 504525    | 231-09LTM  | SADL1    | 1.81                 |      |
| 504625    | 235-09LTM  | SADL1    | 2.85                 |      |
| 504725    | 236-09LTM  | SADL1    | 2.60                 |      |
| 504825    | 237-09LTM  | SADL1    | 1.25                 |      |
| 504925    | 240-09LTM  | SADL1    | 2.89                 |      |
| 505025    | 241-09LTM  | SA       | 0.805                |      |
| 505125    | 242-09LTM  | SADL1    | 0.631                | J    |
| 505225    | 245-09LTM  | SADL1    | 1.45                 |      |
| 505325    | 247-09LTM  | SADL1    | 1.41                 |      |
| 505425    | 249-09LTM  | SADL1    | 0.834                |      |
| 505525    | 250-09LTM  | SA       | 0.437                |      |
| 505625    | 253-09LTM  | SADL1    | 1.74                 |      |
| 505725    | 304-09LTM  | SA       | 0.940                |      |
| 505825    | 306-09LTM  | SA       | 0.050                | J    |
| 505925    | 309-09LTM  | SA       | 1.14                 |      |
| 506025    | 310-09LTM  | SA       | 0.306                |      |
| 506125    | 311-09LTM  | SA       | 3.28                 |      |
| 506225    | 317-09LTM  | SA       | 1.30                 |      |
| 506325    | 318-09LTM  | SA       | 0.101                | J    |
| 506425    | 323-09LTM  | SA       | 0.662                |      |
| 508235    | 323-09LTM  | SA (REP) | 0.844                |      |
| 506525    | 324-09LTM  | SA       | 1.31                 |      |
| 506625    | 325-09LTM  | SA       | 1.19                 |      |
| 506725    | 331-09LTM  | SA       | 1.49                 |      |
| 506825    | 332-09LTM  | SA       | 0.301                |      |
| 506925    | 333-09LTM  | SA       | 1.34                 |      |
| 507025    | 334-09LTM  | SA       | 1.19                 |      |
| 507125    | 335-09LTM  | SA       | 1.10                 |      |
| 507225    | 338-09LTM  | SA       | 1.17                 |      |
| 507325    | 339-09LTM  | SA       | 0.987                |      |
| 507425    | 340-09LTM  | SA       | 0.961                |      |
| 507525    | 341-09LTM  | SA       | 0.239                |      |
| 507625    | 345-09LTM  | SA       | 1.33                 |      |
| 507725    | 346-09LTM  | SA       | 0.176                |      |
| 507825    | 349-09LTM  | SA       | 0.390                |      |
| 507925    | 352-09LTM  | SA       | 0.509                |      |

**APPENDIX G. SEDIMENT GRAIN SIZE DATA FROM THE 2009  
NBH LTM V SURVEY – CHEMISTRY SAMPLES**

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Woods Hole Group

| Sample ID | Station ID | QC Code     | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      | Total Fines | d50    |
|-----------|------------|-------------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|-------------|--------|
|           |            |             | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |             |        |
| 500126    | 105-09LTM  | SADL1       | 0.1    |      | 0.5              |      | 1.8         |      | 2.5         |      | 4.1       |      | 14             |      | 55   |      | 23   |      | 77          | 0.0370 |
| 500226    | 108-09LTM  | SADL1       | 0.4    |      | 4                |      | 6.6         |      | 7.5         |      | 9.1       |      | 15             |      | 38   |      | 19   |      | 57          | 0.0527 |
| 500326    | 109-09LTM  | SADL1       | 0.9    |      | 3.5              |      | 5.9         |      | 6.6         |      | 12        |      | 18             |      | 36   |      | 12   |      | 49          | 0.0648 |
| 500426    | 111-09LTM  | SADL1       | 0.1    |      | 1.1              |      | 4.3         |      | 5.2         |      | 4.9       |      | 11             |      | 46   |      | 27   |      | 73          | 0.0350 |
| 500526    | 114-09LTM  | SADL1       | 0.1    | U    | 1.4              |      | 5.4         |      | 5.6         |      | 4         |      | 13             |      | 46   |      | 25   |      | 71          | 0.0415 |
| 500626    | 115-09LTM  | SADL1       | 0.4    |      | 0.4              |      | 0.1         |      | 2           |      | 2.5       |      | 14             |      | 52   |      | 29   |      | 81          | 0.0389 |
| 500726    | 117-09LTM  | SADL1       | 2.8    |      | 3.2              |      | 3.9         |      | 6.5         |      | 5         |      | 14             |      | 45   |      | 19   |      | 64          | 0.0484 |
| 500826    | 120-09LTM  | SADL1       | 0.3    |      | 0.4              |      | 0.9         |      | 2           |      | 6.1       |      | 15             |      | 48   |      | 28   |      | 76          | 0.0394 |
| 500926    | 121-09LTM  | SADL1       | 1.1    |      | 0.9              |      | 2.2         |      | 5.9         |      | 9.2       |      | 18             |      | 46   |      | 17   |      | 63          | 0.0501 |
| 501026    | 123-09LTM  | SADL1       | 0.1    |      | 0.1              |      | 0.3         |      | 0.9         |      | 1.2       |      | 11             |      | 53   |      | 33   |      | 86          | 0.0236 |
| 501126    | 125-09LTM  | SADL1       | 0.9    |      | 0.9              |      | 7           |      | 7.1         |      | 7.2       |      | 16             |      | 45   |      | 13   |      | 58          | 0.0551 |
| 501226    | 126-09LTM  | SADL1       | 6.9    |      | 4                |      | 6.3         |      | 19          |      | 28        |      | 15             |      | 9.1  |      | 1.9  |      | 11          | 0.2301 |
| 501326    | 128-09LTM  | SADL1       | 2.1    |      | 2.2              |      | 1.4         |      | 1.4         |      | 2         |      | 15             |      | 55   |      | 20   |      | 75          | 0.0451 |
| 501426    | 130-09LTM  | SADL1       | 11     |      | 7.6              |      | 7.9         |      | 14          |      | 15        |      | 10             |      | 11   |      | 3    |      | 14          | 0.3932 |
| 501526    | 131-09LTM  | SADL1       | 5.3    |      | 4.6              |      | 5.3         |      | 9.3         |      | 11        |      | 15             |      | 32   |      | 12   |      | 44          | 0.0711 |
| 501626    | 134-09LTM  | SADL1       | 2.4    |      | 8.1              |      | 8.6         |      | 7.5         |      | 7.1       |      | 14             |      | 37   |      | 15   |      | 51          | 0.0607 |
| 501726    | 135-09LTM  | SADL1       | 9      |      | 5.1              |      | 9.3         |      | 18          |      | 27        |      | 14             |      | 3.8  |      | 1.1  |      | 5           | 0.2883 |
| 501826    | 138-09LTM  | SADL1       | 0.1    | U    | 3.3              |      | 8.1         |      | 7.9         |      | 6.5       |      | 12             |      | 40   |      | 22   |      | 62          | 0.0473 |
| 501926    | 139-09LTM  | SADL1       | 5.3    |      | 11               |      | 10          |      | 8.6         |      | 11        |      | 15             |      | 26   |      | 11   |      | 36          | 0.1146 |
| 502026    | 140-09LTM  | SADL1       | 5.2    |      | 15               |      | 11          |      | 9.4         |      | 13        |      | 14             |      | 22   |      | 9.6  |      | 31          | 0.1619 |
| 502126    | 146-09LTM  | SADL1       | 3.9    |      | 6.1              |      | 3.9         |      | 2.8         |      | 2.7       |      | 13             |      | 49   |      | 17   |      | 66          | 0.0495 |
| 508036    | 146-09LTM  | SADL1 (REP) | 5.1    |      | 5.3              |      | 9           |      | 17          |      | 25        |      | 13             |      | 14   |      | 5    |      | 19          | 0.2055 |
| 502226    | 147-09LTM  | SADL1       | 1.8    |      | 3.1              |      | 7.7         |      | 22          |      | 41        |      | 18             |      | 0.8  |      | 0.2  |      | 1           | 0.2111 |
| 502326    | 150-09LTM  | SADL1       | 5.3    |      | 5.9              |      | 8.9         |      | 17          |      | 13        |      | 11             |      | 23   |      | 14   |      | 37          | 0.1380 |
| 502426    | 151-09LTM  | SADL1       | 5.6    |      | 7.8              |      | 6.3         |      | 7.1         |      | 1.8       |      | 17             |      | 33   |      | 13   |      | 46          | 0.0668 |
| 502526    | 152-09LTM  | SADL1       | 0.3    |      | 0.3              |      | 1.2         |      | 1.4         |      | 1.6       |      | 18             |      | 58   |      | 20   |      | 78          | 0.0459 |
| 502626    | 154-09LTM  | SA          | 6.7    |      | 9                |      | 21          |      | 31          |      | 8.7       |      | 3.4            |      | 2.8  |      | 0.6  |      | 3           | 0.5458 |
| 502726    | 155-09LTM  | SADL1       | 1.5    |      | 2.9              |      | 8.2         |      | 26          |      | 25        |      | 11             |      | 6.5  |      | 1.7  |      | 8           | 0.2869 |
| 502826    | 202-09LTM  | SA          | 7.7    |      | 23               |      | 35          |      | 28          |      | 1.5       |      | 0.8            |      | 0.9  |      | 0.2  |      | 1           | 0.6992 |
| 502926    | 204-09LTM  | SADL1       | 2.2    |      | 4.2              |      | 4.5         |      | 12          |      | 22        |      | 15             |      | 23   |      | 7.6  |      | 31          | 0.1449 |
| 503026    | 207-09LTM  | SADL1       | 4.2    |      | 5                |      | 6.3         |      | 8.7         |      | 17        |      | 18             |      | 28   |      | 5.6  |      | 33          | 0.1194 |
| 503126    | 208-09LTM  | SA          | 0.4    |      | 1.3              |      | 4.6         |      | 14          |      | 52        |      | 22             |      | 5.4  |      | 0.9  |      | 6           | 0.1681 |
| 503226    | 211-09LTM  | SADL1       | 6.9    |      | 3.5              |      | 4.9         |      | 11          |      | 15        |      | 17             |      | 26   |      | 6.3  |      | 32          | 0.1285 |
| 503326    | 212-09LTM  | SADL1       | 2.6    |      | 3.1              |      | 0.7         |      | 2.5         |      | 3.2       |      | 13             |      | 55   |      | 18   |      | 73          | 0.0416 |
| 508136    | 212-09LTM  | SADL1 (REP) | 3.6    |      | 3.7              |      | 3.2         |      | 5           |      | 4.9       |      | 14             |      | 49   |      | 15   |      | 64          | 0.0476 |
| 503426    | 216-09LTM  | SADL1       | 0.3    |      | 0.6              |      | 5           |      | 23          |      | 25        |      | 17             |      | 25   |      | 3.7  |      | 29          | 0.1409 |
| 503526    | 217-09LTM  | SADL1       | 1.3    |      | 1.5              |      | 0.9         |      | 0.6         |      | 0.7       |      | 11             |      | 60   |      | 24   |      | 84          | 0.0330 |
| 503626    | 218-09LTM  | SA          | 6.4    |      | 3.2              |      | 7.3         |      | 39          |      | 8         |      | 3.4            |      | 1.9  |      | 0.2  |      | 2           | 0.4246 |
| 503726    | 220-09LTM  | SADL1       | 3.2    |      | 4.4              |      | 11          |      | 22          |      | 13        |      | 13             |      | 24   |      | 6    |      | 30          | 0.1848 |
| 503826    | 221-09LTM  | SADL1       | 4.5    |      | 4.2              |      | 5.5         |      | 11          |      | 22        |      | 19             |      | 20   |      | 3.2  |      | 24          | 0.1578 |
| 503926    | 222-09LTM  | SADL1       | 4.4    |      | 4.6              |      | 5.1         |      | 9.2         |      | 12        |      | 13             |      | 32   |      | 12   |      | 43          | 0.0732 |
| 504026    | 224-09LTM  | SADL1       | 0.7    |      | 1.3              |      | 1.8         |      | 3.1         |      | 6.2       |      | 14             |      | 50   |      | 22   |      | 72          | 0.0405 |
| 504126    | 225-09LTM  | SADL1       | 3.6    |      | 4.4              |      | 9.5         |      | 20          |      | 20        |      | 17             |      | 18   |      | 4.3  |      | 22          | 0.1859 |
| 504226    | 226-09LTM  | SADL1       | 2.9    |      | 2.1              |      | 2.3         |      | 3.3         |      | 4.6       |      | 14             |      | 51   |      | 17   |      | 68          | 0.0462 |
| 504326    | 227-09LTM  | SADL1       | 2.6    |      | 1.7              |      | 2.7         |      | 9.4         |      | 22        |      | 22             |      | 25   |      | 6.3  |      | 32          | 0.1127 |
| 504426    | 230-09LTM  | SADL1       | 2.8    |      | 4.8              |      | 10          |      | 19          |      | 17        |      | 13             |      | 23   |      | 5.6  |      | 28          | 0.1816 |
| 504526    | 231-09LTM  | SADL1       | 0.2    |      | 0.1              |      | 1.8         |      | 1.8         |      | 0.9       |      | 11             |      | 52   |      | 32   |      | 84          | 0.0325 |
| 504626    | 235-09LTM  | SADL1       | 0.3    |      | 0.4              |      | 2           |      | 5.5         |      | 9.4       |      | 15             |      | 49   |      | 18   |      | 67          | 0.0459 |
| 504726    | 236-09LTM  | SADL1       | 12     |      | 11               |      | 12          |      | 13          |      | 7.1       |      | 5              |      | 8.7  |      | 3.2  |      | 12          | 1.0943 |
| 504826    | 237-09LTM  | SADL1       | 9.9    |      | 8.3              |      | 11          |      | 13          |      | 8.8       |      | 7.9            |      | 16   |      | 2.6  |      | 18          | 0.5688 |

*Woods Hole Group*

| Sample ID | Station ID | QC Code  | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      | Total Fines | d50    |
|-----------|------------|----------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|-------------|--------|
|           |            |          | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual | %           |        |
| 504926    | 240-09LTM  | SADL1    | 0.4    |      | 0.5              |      | 1.8         |      | 3.7         |      | 5.3       |      | 11             |      | 53   |      | 24   |      | 77          | 0.0337 |
| 505026    | 241-09LTM  | SA       | 4.5    |      | 5                |      | 13          |      | 24          |      | 19        |      | 12             |      | 13   |      | 2.6  |      | 15          | 0.2779 |
| 505126    | 242-09LTM  | SADL1    | 2.4    |      | 1.5              |      | 3.2         |      | 8.9         |      | 30        |      | 24             |      | 17   |      | 4    |      | 21          | 0.1412 |
| 505226    | 245-09LTM  | SADL1    | 1.6    |      | 1.5              |      | 5.6         |      | 14          |      | 23        |      | 17             |      | 29   |      | 7.4  |      | 36          | 0.1138 |
| 505326    | 247-09LTM  | SADL1    | 0.2    |      | 0.3              |      | 2.1         |      | 6.3         |      | 24        |      | 23             |      | 31   |      | 10   |      | 41          | 0.0783 |
| 505426    | 249-09LTM  | SADL1    | 4.5    |      | 6.5              |      | 13          |      | 18          |      | 25        |      | 15             |      | 11   |      | 2.4  |      | 14          | 0.2228 |
| 505526    | 250-09LTM  | SA       | 6.2    |      | 13               |      | 23          |      | 28          |      | 5.7       |      | 5.9            |      | 11   |      | 2.7  |      | 14          | 0.4657 |
| 505626    | 253-09LTM  | SADL1    | 4.8    |      | 13               |      | 13          |      | 13          |      | 9.9       |      | 12             |      | 26   |      | 7.2  |      | 33          | 0.1836 |
| 505726    | 304-09LTM  | SA       | 2.3    |      | 4                |      | 9.1         |      | 22          |      | 23        |      | 15             |      | 16   |      | 4    |      | 20          | 0.1945 |
| 505826    | 306-09LTM  | SA       | 0.6    |      | 4.4              |      | 17          |      | 49          |      | 16        |      | 5.8            |      | 5.2  |      | 0.8  |      | 6           | 0.3256 |
| 505926    | 309-09LTM  | SA       | 1.1    |      | 2.3              |      | 3.4         |      | 6.6         |      | 10        |      | 19             |      | 22   |      | 8.8  |      | 31          | 0.1262 |
| 506026    | 310-09LTM  | SA       | 2.3    |      | 4.5              |      | 9.5         |      | 16          |      | 16        |      | 19             |      | 21   |      | 5.5  |      | 26          | 0.1572 |
| 506126    | 311-09LTM  | SA       | 3.2    |      | 4.5              |      | 9.7         |      | 35          |      | 32        |      | 8.9            |      | 1.7  |      | 0.6  |      | 2           | 0.2812 |
| 506226    | 317-09LTM  | SA       | 2.4    |      | 5.4              |      | 4.9         |      | 4.3         |      | 11        |      | 21             |      | 40   |      | 10   |      | 50          | 0.0627 |
| 506326    | 318-09LTM  | SA       | 2.3    |      | 3.6              |      | 19          |      | 45          |      | 20        |      | 5.6            |      | 0.6  |      | 0.2  |      | 1           | 0.3443 |
| 506426    | 323-09LTM  | SA       | 0.7    |      | 0.9              |      | 0.5         |      | 3.5         |      | 5.7       |      | 16             |      | 51   |      | 21   |      | 72          | 0.0414 |
| 508236    | 323-09LTM  | SA (REP) | 1.3    |      | 0.8              |      | 1.2         |      | 3           |      | 13        |      | 15             |      | 45   |      | 17   |      | 62          | 0.0476 |
| 506526    | 324-09LTM  | SA       | 2.2    |      | 2.4              |      | 3.1         |      | 5.6         |      | 8.3       |      | 17             |      | 44   |      | 17   |      | 61          | 0.0509 |
| 506626    | 325-09LTM  | SA       | 0.2    |      | 0.9              |      | 2.4         |      | 6.4         |      | 6.8       |      | 13             |      | 46   |      | 24   |      | 70          | 0.0400 |
| 506726    | 331-09LTM  | SA       | 0.3    |      | 1.5              |      | 2.5         |      | 3.6         |      | 3         |      | 12             |      | 54   |      | 23   |      | 77          | 0.0366 |
| 506826    | 332-09LTM  | SA       | 1.2    |      | 3.5              |      | 10          |      | 36          |      | 24        |      | 11             |      | 11   |      | 3    |      | 14          | 0.2592 |
| 506926    | 333-09LTM  | SA       | 11     |      | 5.8              |      | 4.6         |      | 3.6         |      | 2.4       |      | 9.1            |      | 28   |      | 6.9  |      | 34          | 0.5412 |
| 507026    | 334-09LTM  | SA       | 0.8    |      | 1.1              |      | 1.1         |      | 2.4         |      | 4.4       |      | 19             |      | 56   |      | 16   |      | 71          | 0.0484 |
| 507126    | 335-09LTM  | SA       | 8.4    |      | 7                |      | 6.5         |      | 10          |      | 2.9       |      | 9.8            |      | 31   |      | 8.8  |      | 40          | 0.1351 |
| 507226    | 338-09LTM  | SA       | 0.1    | U    | 0.3              |      | 0.3         |      | 1.8         |      | 5.5       |      | 12             |      | 52   |      | 28   |      | 80          | 0.0270 |
| 507326    | 339-09LTM  | SA       | 0.4    |      | 0.4              |      | 0.5         |      | 1.3         |      | 6.7       |      | 21             |      | 52   |      | 15   |      | 67          | 0.0470 |
| 507426    | 340-09LTM  | SA       | 0.2    |      | 0.3              |      | 0.5         |      | 1.1         |      | 1.8       |      | 13             |      | 54   |      | 30   |      | 83          | 0.0322 |
| 507526    | 341-09LTM  | SA       | 0.4    |      | 2.1              |      | 16          |      | 29          |      | 28        |      | 13             |      | 9.5  |      | 2.3  |      | 12          | 0.2342 |
| 507626    | 345-09LTM  | SA       | 0.1    | U    | 0.2              |      | 0.3         |      | 0.5         |      | 1.2       |      | 16             |      | 60   |      | 22   |      | 82          | 0.0373 |
| 507726    | 346-09LTM  | SA       | 1.2    |      | 0.4              |      | 1.7         |      | 24          |      | 51        |      | 16             |      | 4.1  |      | 1.2  |      | 5           | 0.1848 |
| 507826    | 349-09LTM  | SA       | 0.2    |      | 1.8              |      | 6.1         |      | 16          |      | 7.7       |      | 30             |      | 31   |      | 7    |      | 38          | 0.0797 |
| 507926    | 352-09LTM  | SA       | 11     |      | 15               |      | 20          |      | 16          |      | 4.9       |      | 5.6            |      | 9.8  |      | 2.5  |      | 12          | 0.7155 |

**APPENDIX H. SEDIMENT GRAIN SIZE DATA FROM THE 2009  
NBH LTM V SURVEY – BENTHIC SAMPLES**

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| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 500111    | 105-09LTM  | SA      | 0.1    | U    | 0.4              |      | 1.5         |      | 2.3         |      | 3.3       |      | 11.2           |      | 50.6 |      | 30.7 |      |
| 500112    | 105-09LTM  | SA      | 0.1    | U    | 0.1              |      | 0.5         |      | 0.8         |      | 1.8       |      | 12.5           |      | 56.1 |      | 28.2 |      |
| 500113    | 105-09LTM  | SA      | 0.1    | U    | 0.4              |      | 1.2         |      | 1.9         |      | 2.8       |      | 13.4           |      | 57.6 |      | 22.7 |      |
| 500211    | 108-09LTM  | SA      | 0.8    |      | 2.9              |      | 5.3         |      | 7.3         |      | 9.7       |      | 15.9           |      | 36.6 |      | 18.5 |      |
| 500212    | 108-09LTM  | SA      | 0.2    |      | 2.1              |      | 4.9         |      | 6           |      | 8         |      | 15.1           |      | 39.5 |      | 24.1 |      |
| 500213    | 108-09LTM  | SA      | 0.3    |      | 2.9              |      | 5           |      | 6.6         |      | 10.1      |      | 17.1           |      | 40.3 |      | 17.6 |      |
| 500311    | 109-09LTM  | SA      | 0.2    |      | 2.2              |      | 3.5         |      | 4.2         |      | 9.5       |      | 18.2           |      | 47.8 |      | 14.4 |      |
| 500312    | 109-09LTM  | SA      | 0.2    |      | 2                |      | 3.9         |      | 6.2         |      | 12.2      |      | 19.8           |      | 41.7 |      | 14   |      |
| 500313    | 109-09LTM  | SA      | 2.2    |      | 6.7              |      | 7.2         |      | 8.3         |      | 15.6      |      | 19.3           |      | 30.1 |      | 9.7  |      |
| 500411    | 111-09LTM  | SA      | 0.1    | U    | 0.3              |      | 1.5         |      | 2.7         |      | 3.5       |      | 12.1           |      | 49.9 |      | 30   |      |
| 500412    | 111-09LTM  | SA      | 0.1    | U    | 0.5              |      | 2.3         |      | 3.7         |      | 4.4       |      | 12.3           |      | 48.6 |      | 28.2 |      |
| 500413    | 111-09LTM  | SA      | 0.1    | U    | 0.2              |      | 0.3         |      | 1.1         |      | 2.6       |      | 12.1           |      | 54   |      | 29.7 |      |
| 500511    | 114-09LTM  | SA      | 0.8    |      | 5.5              |      | 6.9         |      | 5.6         |      | 4.5       |      | 10             |      | 39.2 |      | 26.9 |      |
| 500512    | 114-09LTM  | SA      | 0.1    | U    | 1.2              |      | 5           |      | 5.8         |      | 4.6       |      | 11.7           |      | 44   |      | 27.7 |      |
| 500513    | 114-09LTM  | SA      | 0.1    | U    | 0.8              |      | 3.3         |      | 3.8         |      | 2.9       |      | 10.9           |      | 53.8 |      | 24.5 |      |
| 500611    | 115-09LTM  | SA      | 0.3    |      | 0.4              |      | 0.6         |      | 1.3         |      | 1.9       |      | 11.6           |      | 59.3 |      | 24.1 |      |
| 500612    | 115-09LTM  | SA      | 0.3    |      | 0.5              |      | 1           |      | 2.1         |      | 1.9       |      | 12.1           |      | 55.5 |      | 25.9 |      |
| 500613    | 115-09LTM  | SA      | 0.4    |      | 0.4              |      | 0.4         |      | 1.1         |      | 1.8       |      | 11.8           |      | 62   |      | 22   |      |
| 500711    | 117-09LTM  | SA      | 1.6    |      | 2.8              |      | 4.2         |      | 6.1         |      | 5.2       |      | 13.4           |      | 41.9 |      | 15.5 |      |
| 500712    | 117-09LTM  | SA      | 0.7    |      | 2.2              |      | 2.6         |      | 3.7         |      | 2.4       |      | 12.4           |      | 50.1 |      | 25.6 |      |
| 500713    | 117-09LTM  | SA      | 2.2    |      | 3.3              |      | 4.6         |      | 5.4         |      | 4.8       |      | 13.7           |      | 45.7 |      | 19.5 |      |
| 500811    | 120-09LTM  | SA      | 0.4    |      | 1.1              |      | 0.8         |      | 3.5         |      | 8.8       |      | 16.6           |      | 44.7 |      | 23.7 |      |
| 500812    | 120-09LTM  | SA      | 0.6    |      | 1                |      | 2           |      | 3.7         |      | 9.6       |      | 15.9           |      | 44.9 |      | 22.2 |      |
| 500813    | 120-09LTM  | SA      | 1.3    |      | 0.9              |      | 0.6         |      | 2.1         |      | 6         |      | 14.6           |      | 48.9 |      | 24.7 |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 500911    | 121-09LTM  | SA      | 0.4    |      | 0.6              |      | 0.6         |      | 4           |      | 5         |      | 12.9           |      | 46.3 |      | 30   |      |
| 500912    | 121-09LTM  | SA      | 0.7    |      | 0.8              |      | 1.9         |      | 4.8         |      | 6         |      | 14.8           |      | 50.5 |      | 20.3 |      |
| 500913    | 121-09LTM  | SA      | 1.6    |      | 0.4              |      | 0.6         |      | 4.2         |      | 8.3       |      | 18.2           |      | 47.5 |      | 17.9 |      |
| 501011    | 123-09LTM  | SA      | 2.9    |      | 1.6              |      | 1           |      | 4.6         |      | 5.4       |      | 13.1           |      | 49.4 |      | 19.5 |      |
| 501012    | 123-09LTM  | SA      | 1.3    |      | 1.4              |      | 2.8         |      | 5.5         |      | 5.3       |      | 13.5           |      | 48.5 |      | 21.4 |      |
| 501013    | 123-09LTM  | SA      | 0.3    |      | 0.1              |      | 0.5         |      | 1.2         |      | 1.6       |      | 11.2           |      | 49.6 |      | 35.3 |      |
| 501111    | 125-09LTM  | SA      | 0.2    |      | 0.8              |      | 1.6         |      | 2.2         |      | 3.5       |      | 6.7            |      | 40.3 |      | 44.6 |      |
| 501112    | 125-09LTM  | SA      | 0.3    |      | 0.4              |      | 10.6        |      | 3.7         |      | 1.4       |      | 11.2           |      | 44.5 |      | 27.8 |      |
| 501113    | 125-09LTM  | SA      | 0.3    |      | 0.3              |      | 0.1         |      | 0.2         |      | 0.6       |      | 11.4           |      | 55.8 |      | 31.2 |      |
| 501211    | 126-09LTM  | SA      | 10.3   |      | 5.5              |      | 8.7         |      | 20.5        |      | 24.4      |      | 11.4           |      | 4.6  |      | 1    |      |
| 501212    | 126-09LTM  | SA      | 8.8    |      | 6                |      | 9           |      | 22.2        |      | 25.4      |      | 11.1           |      | 6.3  |      | 1.1  |      |
| 501213    | 126-09LTM  | SA      | 5.4    |      | 4.1              |      | 12.8        |      | 24.3        |      | 28.8      |      | 12             |      | 1.5  |      | 0.3  |      |
| 501311    | 128-09LTM  | SA      | 3.8    |      | 8                |      | 3.6         |      | 4.2         |      | 4.6       |      | 11.8           |      | 42.2 |      | 19.8 |      |
| 501312    | 128-09LTM  | SA      | 0.8    |      | 2.3              |      | 2.3         |      | 3           |      | 3.5       |      | 12.5           |      | 50.3 |      | 25.1 |      |
| 501313    | 128-09LTM  | SA      | 2.4    |      | 7.1              |      | 2.5         |      | 4.6         |      | 6.5       |      | 13.7           |      | 41.2 |      | 21.3 |      |
| 501411    | 130-09LTM  | SA      | 6.6    |      | 9                |      | 10.5        |      | 16.3        |      | 15.5      |      | 10.9           |      | 13.9 |      | 2.6  |      |
| 501412    | 130-09LTM  | SA      | 7.6    |      | 10               |      | 12.5        |      | 19          |      | 19.2      |      | 12.2           |      | 10.1 |      | 2.4  |      |
| 501413    | 130-09LTM  | SA      | 7.5    |      | 10.5             |      | 11.6        |      | 17.5        |      | 17.3      |      | 10.6           |      | 10.6 |      | 2.1  |      |
| 501511    | 131-09LTM  | SA      | 4      |      | 4.4              |      | 6.9         |      | 13.1        |      | 12.3      |      | 14.3           |      | 31.3 |      | 12.2 |      |
| 501512    | 131-09LTM  | SA      | 1.7    |      | 4.7              |      | 5.9         |      | 11.1        |      | 11.8      |      | 15.3           |      | 34.8 |      | 13.2 |      |
| 501513    | 131-09LTM  | SA      | 3.1    |      | 5                |      | 7           |      | 11.1        |      | 10.5      |      | 14.7           |      | 34.6 |      | 12.3 |      |
| 501611    | 134-09LTM  | SA      | 1.4    |      | 12.2             |      | 14.1        |      | 11.2        |      | 8.7       |      | 13             |      | 24.1 |      | 14.9 |      |
| 501612    | 134-09LTM  | SA      | 0.5    |      | 6.9              |      | 9.8         |      | 8.8         |      | 7.3       |      | 13.4           |      | 33.9 |      | 18.8 |      |
| 501613    | 134-09LTM  | SA      | 1.1    |      | 9.4              |      | 11.3        |      | 9.7         |      | 9.6       |      | 13.5           |      | 27.8 |      | 17.3 |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 501613    | 134-09LTM  | SA      | 1.1    |      | 9.4              |      | 11.3        |      | 9.7         |      | 9.6       |      | 13.5           |      | 27.8 |      | 17.3 |      |
| 501711    | 135-09LTM  | SA      | 7.7    |      | 4.7              |      | 8.9         |      | 16.9        |      | 24.5      |      | 13.5           |      | 4.7  |      | 1.3  |      |
| 501712    | 135-09LTM  | SA      | 11.4   |      | 6.3              |      | 10.9        |      | 19.9        |      | 23.6      |      | 11.5           |      | 2.2  |      | 0.7  |      |
| 501713    | 135-09LTM  | SA      | 10     |      | 6.9              |      | 11.6        |      | 19.1        |      | 22.4      |      | 12.1           |      | 4.3  |      | 1.3  |      |
| 501811    | 138-09LTM  | SA      | 0.1    | U    | 6.8              |      | 11.5        |      | 10.2        |      | 8.4       |      | 11.6           |      | 31.9 |      | 19.6 |      |
| 501812    | 138-09LTM  | SA      | 3.3    |      | 12.3             |      | 10.5        |      | 8.8         |      | 10.6      |      | 15.9           |      | 26.4 |      | 11.4 |      |
| 501813    | 138-09LTM  | SA      | 0.1    | U    | 3.4              |      | 7.1         |      | 7           |      | 6.1       |      | 13.1           |      | 46.2 |      | 17.1 |      |
| 501911    | 139-09LTM  | SA      | 1.5    |      | 7.1              |      | 8.8         |      | 10          |      | 14.2      |      | 18             |      | 24.2 |      | 12.6 |      |
| 501912    | 139-09LTM  | SA      | 5.9    |      | 12.9             |      | 10          |      | 8.4         |      | 9.9       |      | 13.8           |      | 25.6 |      | 10   |      |
| 501913    | 139-09LTM  | SA      | 1.9    |      | 12               |      | 9.3         |      | 9           |      | 12.1      |      | 17             |      | 26.1 |      | 12.1 |      |
| 502011    | 140-09LTM  | SA      | 2.6    |      | 10.6             |      | 11          |      | 10.2        |      | 10.7      |      | 14.9           |      | 27.1 |      | 12.2 |      |
| 502012    | 140-09LTM  | SA      | 0.1    | U    | 4.1              |      | 7.4         |      | 7           |      | 5.8       |      | 10.8           |      | 44.9 |      | 20   |      |
| 502013    | 140-09LTM  | SA      | 3      |      | 11.6             |      | 11.3        |      | 10.1        |      | 11.5      |      | 14.5           |      | 23.9 |      | 11.3 |      |
| 502111    | 146-09LTM  | SA      | 6.7    |      | 5.7              |      | 8.1         |      | 25.3        |      | 20.7      |      | 10.1           |      | 7.8  |      | 2.4  |      |
| 502112    | 146-09LTM  | SA      | 43     |      | 13.2             |      | 9.7         |      | 10.5        |      | 1.7       |      | 3.7            |      | 1.2  |      | 0.4  |      |
| 502113    | 146-09LTM  | SA      | 7.6    |      | 7.6              |      | 10.2        |      | 17.6        |      | 25.1      |      | 12.6           |      | 11.3 |      | 4.1  |      |
| 502211    | 147-09LTM  | SA      | 0.9    |      | 2.2              |      | 7.1         |      | 19.2        |      | 40.3      |      | 20.5           |      | 6.7  |      | 2    |      |
| 502212    | 147-09LTM  | SA      | 1.5    |      | 7.4              |      | 10.7        |      | 8.6         |      | 11.9      |      | 19.4           |      | 25.5 |      | 7.8  |      |
| 502213    | 147-09LTM  | SA      | 1.1    |      | 2.5              |      | 7           |      | 18.4        |      | 37.8      |      | 19.8           |      | 6.3  |      | 2    |      |
| 502311    | 150-09LTM  | SA      | 5.7    |      | 6.8              |      | 9.2         |      | 15.1        |      | 13        |      | 11.8           |      | 22.2 |      | 8.2  |      |
| 502312    | 150-09LTM  | SA      | 7.8    |      | 8.8              |      | 6.6         |      | 12          |      | 13.3      |      | 11.5           |      | 23.7 |      | 10.3 |      |
| 502313    | 150-09LTM  | SA      | 3.8    |      | 5.8              |      | 10.2        |      | 22.4        |      | 21.3      |      | 13.3           |      | 14.2 |      | 4.8  |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 502411    | 151-09LTM  | SA      | 0.7    |      | 1.5              |      | 5.4         |      | 17.9        |      | 48        |      | 19.1           |      | 4.8  |      | 1.7  |      |
| 502412    | 151-09LTM  | SA      | 6.4    |      | 11.9             |      | 9.1         |      | 21.9        |      | 14.9      |      | 13.9           |      | 10.2 |      | 3.9  |      |
| 502413    | 151-09LTM  | SA      | 2      |      | 1.9              |      | 4.9         |      | 16.1        |      | 45.6      |      | 20.2           |      | 6.3  |      | 2.4  |      |
| 502511    | 152-09LTM  | SA      | 2      |      | 4                |      | 7.4         |      | 14.1        |      | 11.8      |      | 15.3           |      | 34.7 |      | 9.8  |      |
| 502512    | 152-09LTM  | SA      | 1.7    |      | 2.9              |      | 5.6         |      | 12.5        |      | 11        |      | 14.7           |      | 38.4 |      | 11.8 |      |
| 502513    | 152-09LTM  | SA      | 2.7    |      | 4                |      | 7           |      | 14.5        |      | 14.9      |      | 18.2           |      | 29.3 |      | 7.9  |      |
| 502611    | 154-09LTM  | SA      | 10     |      | 12.2             |      | 22.9        |      | 28.6        |      | 7.2       |      | 2.8            |      | 2    |      | 0.4  |      |
| 502612    | 154-09LTM  | SA      | 11.4   |      | 13.2             |      | 24.2        |      | 24.1        |      | 2.8       |      | 1.4            |      | 1.9  |      | 0.4  |      |
| 502613    | 154-09LTM  | SA      | 8.5    |      | 11.8             |      | 24.3        |      | 34.6        |      | 6.8       |      | 2.6            |      | 2    |      | 0.5  |      |
| 502711    | 155-09LTM  | SA      | 1.7    |      | 3.8              |      | 10.9        |      | 31.9        |      | 31.2      |      | 11.7           |      | 4.3  |      | 1    |      |
| 502712    | 155-09LTM  | SA      | 1.2    |      | 3.1              |      | 7.8         |      | 27.8        |      | 34.4      |      | 13.4           |      | 4.5  |      | 1.2  |      |
| 502713    | 155-09LTM  | SA      | 1.4    |      | 3.8              |      | 9.2         |      | 30.1        |      | 33.7      |      | 12.5           |      | 5.4  |      | 1.4  |      |
| 502811    | 202-09LTM  | SA      | 10.4   |      | 18.3             |      | 29.7        |      | 28.2        |      | 2.7       |      | 1.5            |      | 1.9  |      | 0.5  |      |
| 502812    | 202-09LTM  | SA      | 12.3   |      | 16.5             |      | 27.8        |      | 27.3        |      | 2.8       |      | 1.7            |      | 2.3  |      | 0.5  |      |
| 502813    | 202-09LTM  | SA      | 10.1   |      | 21.6             |      | 31.3        |      | 26.7        |      | 2         |      | 1              |      | 1.5  |      | 0.3  |      |
| 502911    | 204-09LTM  | SA      | 4.1    |      | 8                |      | 12.9        |      | 21.8        |      | 17.4      |      | 10.5           |      | 16.3 |      | 6    |      |
| 502912    | 204-09LTM  | SA      | 3.6    |      | 10.2             |      | 8.9         |      | 22.5        |      | 1.4       |      | 11.2           |      | 29.3 |      | 11.1 |      |
| 502913    | 204-09LTM  | SA      | 2.1    |      | 5.2              |      | 5.6         |      | 15.2        |      | 24.9      |      | 15.1           |      | 22.4 |      | 7.5  |      |
| 503011    | 207-09LTM  | SA      | 0.1    |      | 0.5              |      | 0.3         |      | 2.9         |      | 5.1       |      | 14.8           |      | 56.7 |      | 19.5 |      |
| 503012    | 207-09LTM  | SA      | 1.8    |      | 3                |      | 3.6         |      | 6.1         |      | 17.4      |      | 20.9           |      | 36.4 |      | 9.1  |      |
| 503013    | 207-09LTM  | SA      | 2.3    |      | 1.7              |      | 0.6         |      | 4.3         |      | 14.7      |      | 20.3           |      | 42.1 |      | 12.8 |      |
| 503111    | 208-09LTM  | SA      | 0.9    |      | 1.4              |      | 1.7         |      | 13.5        |      | 54.5      |      | 21.5           |      | 5.3  |      | 0.9  |      |
| 503112    | 208-09LTM  | SA      | 6.4    |      | 5.1              |      | 5.9         |      | 17.9        |      | 39.7      |      | 15.4           |      | 6.3  |      | 0.9  |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 503113    | 208-09LTM  | SA      | 0.5    |      | 1.4              |      | 3.4         |      | 13.8        |      | 53.6      |      | 20.4           |      | 5.8  |      | 1    |      |
| 503211    | 211-09LTM  | SA      | 0.8    |      | 2.1              |      | 0.6         |      | 3.6         |      | 5         |      | 12.6           |      | 42.2 |      | 32.9 |      |
| 503212    | 211-09LTM  | SA      | 4.7    |      | 4.3              |      | 6.9         |      | 11.9        |      | 12.6      |      | 16.9           |      | 31   |      | 6.8  |      |
| 503213    | 211-09LTM  | SA      | 3.2    |      | 2.7              |      | 2.5         |      | 11          |      | 16.9      |      | 19.5           |      | 33.4 |      | 7.8  |      |
| 503311    | 212-09LTM  | SA      | 0.9    |      | 1.4              |      | 1.1         |      | 1.9         |      | 2.5       |      | 11.4           |      | 49.8 |      | 30.6 |      |
| 503312    | 212-09LTM  | SA      | 0.9    |      | 0.8              |      | 0.5         |      | 2.5         |      | 2.2       |      | 11             |      | 51.6 |      | 30.2 |      |
| 503313    | 212-09LTM  | SA      | 1.9    |      | 4.3              |      | 4.2         |      | 6.5         |      | 5.5       |      | 12.8           |      | 44.6 |      | 18.1 |      |
| 503411    | 216-09LTM  | SA      | 0.3    |      | 1.2              |      | 6.7         |      | 20.9        |      | 24.6      |      | 17.6           |      | 24.3 |      | 4.3  |      |
| 503412    | 216-09LTM  | SA      | 1.8    |      | 3.4              |      | 10.8        |      | 24.6        |      | 23.9      |      | 14.4           |      | 16.8 |      | 2.9  |      |
| 503413    | 216-09LTM  | SA      | 0.1    |      | 0.8              |      | 9.8         |      | 33.5        |      | 29.7      |      | 15.2           |      | 9.4  |      | 1.5  |      |
| 503511    | 217-09LTM  | SA      | 0.1    |      | 1                |      | 0.4         |      | 2.5         |      | 1.2       |      | 8.4            |      | 52.1 |      | 34   |      |
| 503512    | 217-09LTM  | SA      | 0.1    |      | 2.4              |      | 2           |      | 1.7         |      | 1.2       |      | 9.2            |      | 49   |      | 34.3 |      |
| 503513    | 217-09LTM  | SA      | 0.2    |      | 0.5              |      | 0.2         |      | 2           |      | 0.8       |      | 7.9            |      | 50.2 |      | 38   |      |
| 503611    | 218-09LTM  | SA      | 11.8   |      | 4.2              |      | 4.9         |      | 28.5        |      | 7.4       |      | 2.9            |      | 2.3  |      | 0.3  |      |
| 503612    | 218-09LTM  | SA      | 8.4    |      | 3.2              |      | 4.8         |      | 30.6        |      | 10.6      |      | 4.6            |      | 3.1  |      | 0.4  |      |
| 503613    | 218-09LTM  | SA      | 9.5    |      | 4.6              |      | 7           |      | 35.1        |      | 7.1       |      | 2.7            |      | 1.7  |      | 0.3  |      |
| 503711    | 220-09LTM  | SA      | 4.4    |      | 5.6              |      | 9.3         |      | 25.5        |      | 17.5      |      | 11.4           |      | 16.8 |      | 4.2  |      |
| 503712    | 220-09LTM  | SA      | 4.9    |      | 3.9              |      | 5.9         |      | 17.3        |      | 13.3      |      | 11.7           |      | 19.9 |      | 4.9  |      |
| 503713    | 220-09LTM  | SA      | 3      |      | 3.9              |      | 12.4        |      | 33.8        |      | 18.7      |      | 9.6            |      | 11.6 |      | 2    |      |
| 503811    | 221-09LTM  | SA      | 5.8    |      | 5.8              |      | 7.3         |      | 14.3        |      | 23.4      |      | 18.1           |      | 16   |      | 3.8  |      |
| 503812    | 221-09LTM  | SA      | 7.4    |      | 6.4              |      | 9.1         |      | 17.6        |      | 22.8      |      | 14.3           |      | 9.7  |      | 1.7  |      |
| 503813    | 221-09LTM  | SA      | 5.1    |      | 5.3              |      | 6.4         |      | 11.6        |      | 21.1      |      | 17             |      | 14.1 |      | 2.7  |      |
| 503911    | 222-09LTM  | SA      | 1.7    |      | 7.3              |      | 9.1         |      | 12.6        |      | 11.3      |      | 11.5           |      | 28.5 |      | 16.8 |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 503912    | 222-09LTM  | SA      | 1.7    |      | 1.5              |      | 1.5         |      | 2.6         |      | 4         |      | 14.4           |      | 51.1 |      | 22   |      |
| 503913    | 222-09LTM  | SA      | 3      |      | 6.2              |      | 6.1         |      | 8.7         |      | 8.2       |      | 12.1           |      | 32.4 |      | 13.4 |      |
| 504011    | 224-09LTM  | SA      | 0.3    |      | 1.4              |      | 0.5         |      | 5.1         |      | 9.5       |      | 13.1           |      | 40.2 |      | 29.8 |      |
| 504012    | 224-09LTM  | SA      | 0.9    |      | 1.3              |      | 2.2         |      | 4.5         |      | 8.7       |      | 15             |      | 46.9 |      | 20.2 |      |
| 504013    | 224-09LTM  | SA      | 1.1    |      | 1.3              |      | 0.5         |      | 3.9         |      | 6.9       |      | 15.8           |      | 49   |      | 21.2 |      |
| 504111    | 225-09LTM  | SA      | 2.5    |      | 3.4              |      | 3.7         |      | 11.4        |      | 17.3      |      | 17.4           |      | 27.6 |      | 9.8  |      |
| 504112    | 225-09LTM  | SA      | 2.7    |      | 2.3              |      | 3.5         |      | 7.6         |      | 12.2      |      | 17.3           |      | 37.7 |      | 14.5 |      |
| 504113    | 225-09LTM  | SA      | 2.6    |      | 3.7              |      | 3.7         |      | 8.9         |      | 14.3      |      | 17.4           |      | 34.1 |      | 12.3 |      |
| 504211    | 226-09LTM  | SA      | 0.1    |      | 0.4              |      | 0.2         |      | 3.5         |      | 5.1       |      | 12.9           |      | 50.1 |      | 27.6 |      |
| 504212    | 226-09LTM  | SA      | 1.4    |      | 1.7              |      | 2.7         |      | 5.6         |      | 6.8       |      | 12.6           |      | 38.4 |      | 22   |      |
| 504213    | 226-09LTM  | SA      | 0.7    |      | 1.1              |      | 0.3         |      | 4.9         |      | 5.9       |      | 14.4           |      | 47.6 |      | 24.9 |      |
| 504311    | 227-09LTM  | SA      | 1.3    |      | 1                |      | 0.5         |      | 4.8         |      | 17        |      | 22             |      | 37.8 |      | 10.2 |      |
| 504312    | 227-09LTM  | SA      | 1.7    |      | 1.1              |      | 2.1         |      | 7.6         |      | 18.7      |      | 21.6           |      | 30.5 |      | 7.9  |      |
| 504313    | 227-09LTM  | SA      | 1.9    |      | 1.4              |      | 0.8         |      | 11.1        |      | 23.8      |      | 23.4           |      | 24.5 |      | 11.3 |      |
| 504411    | 230-09LTM  | SA      | 2.1    |      | 5                |      | 9.9         |      | 21.8        |      | 18.3      |      | 13.5           |      | 19.7 |      | 6.6  |      |
| 504412    | 230-09LTM  | SA      | 4      |      | 4                |      | 7.7         |      | 15.3        |      | 17.7      |      | 14             |      | 24.6 |      | 7.8  |      |
| 504413    | 230-09LTM  | SA      | 3.2    |      | 4.8              |      | 9.1         |      | 18.9        |      | 16.3      |      | 12.9           |      | 21.3 |      | 6.9  |      |
| 504511    | 231-09LTM  | SA      | 0.2    |      | 0.3              |      | 0.4         |      | 0.4         |      | 0.8       |      | 8.3            |      | 43.1 |      | 46.4 |      |
| 504512    | 231-09LTM  | SA      | 0.3    |      | 0.2              |      | 5.2         |      | 3.8         |      | 1.5       |      | 7              |      | 38.4 |      | 43.4 |      |
| 504513    | 231-09LTM  | SA      | 0.4    |      | 0.1              |      | 0.2         |      | 0.6         |      | 0.5       |      | 9.4            |      | 50   |      | 38.5 |      |
| 504611    | 235-09LTM  | SA      | 0.1    | U    | 0.5              |      | 1.9         |      | 6.5         |      | 14.8      |      | 16             |      | 40.8 |      | 19.3 |      |
| 504612    | 235-09LTM  | SA      | 0.1    |      | 0.8              |      | 3.3         |      | 5.9         |      | 10.2      |      | 13.8           |      | 41.1 |      | 24.7 |      |
| 504613    | 235-09LTM  | SA      | 0.2    |      | 0.6              |      | 0.7         |      | 3.4         |      | 9.7       |      | 16.1           |      | 46.8 |      | 22.4 |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 505711    | 304-09LTM  | SA      | 2      |      | 2.3              |      | 7.3         |      | 20.6        |      | 25.7      |      | 17.8           |      | 16.1 |      | 4.3  |      |
| 505712    | 304-09LTM  | SA      | 0.2    |      | 3.1              |      | 8.5         |      | 19.2        |      | 25.9      |      | 19.7           |      | 18.1 |      | 4.8  |      |
| 505713    | 304-09LTM  | SA      | 1.7    |      | 2.3              |      | 6.1         |      | 20.7        |      | 25.9      |      | 19.6           |      | 17.2 |      | 4.6  |      |
| 505811    | 306-09LTM  | SA      | 3.2    |      | 5.9              |      | 23.4        |      | 32.3        |      | 0.6       |      | 25.7           |      | 4.1  |      | 0.6  |      |
| 505812    | 306-09LTM  | SA      | 1.2    |      | 4.3              |      | 21.7        |      | 50.1        |      | 17.1      |      | 4.3            |      | 0.1  |      | 0.1  | U    |
| 505813    | 306-09LTM  | SA      | 1      |      | 3.9              |      | 23.2        |      | 50.8        |      | 14.2      |      | 3.6            |      | 0.2  |      | 0.1  | U    |
| 505911    | 309-09LTM  | SA      | 1.1    |      | 1.9              |      | 4.3         |      | 9.2         |      | 15        |      | 22.1           |      | 34.3 |      | 11.8 |      |
| 505912    | 309-09LTM  | SA      | 0.7    |      | 1                |      | 2.5         |      | 7.5         |      | 10.3      |      | 20.5           |      | 39.2 |      | 10   |      |
| 505913    | 309-09LTM  | SA      | 1.2    |      | 1.3              |      | 3.1         |      | 7.9         |      | 9.9       |      | 18.9           |      | 37.6 |      | 11.9 |      |
| 506011    | 310-09LTM  | SA      | 4.5    |      | 6.9              |      | 11.2        |      | 14.2        |      | 12.2      |      | 13.6           |      | 18   |      | 3.9  |      |
| 506012    | 310-09LTM  | SA      | 2.9    |      | 3.2              |      | 8.4         |      | 16.3        |      | 15.8      |      | 17.8           |      | 20.3 |      | 7.4  |      |
| 506013    | 310-09LTM  | SA      | 1      |      | 1.7              |      | 4.9         |      | 11.2        |      | 17.4      |      | 22.4           |      | 32.6 |      | 6.4  |      |
| 506111    | 311-09LTM  | SA      | 2.1    |      | 4                |      | 11.5        |      | 36.8        |      | 32.9      |      | 8              |      | 0.3  |      | 0.1  |      |
| 506112    | 311-09LTM  | SA      | 1.6    |      | 4.4              |      | 11.7        |      | 38.4        |      | 32.7      |      | 8.5            |      | 0.7  |      | 0.2  |      |
| 506113    | 311-09LTM  | SA      | 2.2    |      | 4.8              |      | 13.5        |      | 38.6        |      | 13.9      |      | 7.5            |      | 11.1 |      | 4.3  |      |
| 506211    | 317-09LTM  | SA      | 0.9    |      | 5.6              |      | 7.4         |      | 5.6         |      | 3.2       |      | 10             |      | 45.9 |      | 21.1 |      |
| 506212    | 317-09LTM  | SA      | 0.7    |      | 4.8              |      | 5.2         |      | 4.6         |      | 3.3       |      | 10.3           |      | 48.7 |      | 22.2 |      |
| 506213    | 317-09LTM  | SA      | 0.3    |      | 6.1              |      | 9.6         |      | 8           |      | 5.1       |      | 11.6           |      | 38   |      | 21.1 |      |
| 506311    | 318-09LTM  | SA      | 3      |      | 3.9              |      | 20.6        |      | 43.5        |      | 20.2      |      | 5.7            |      | 1    |      | 0.2  |      |
| 506312    | 318-09LTM  | SA      | 2.3    |      | 3.8              |      | 18.1        |      | 44.6        |      | 22.6      |      | 6.5            |      | 0.8  |      | 0.2  |      |
| 506313    | 318-09LTM  | SA      | 1.2    |      | 2.2              |      | 17.3        |      | 45.4        |      | 22.3      |      | 6.4            |      | 1.1  |      | 0.3  |      |
| 506411    | 323-09LTM  | SA      | 2.8    |      | 3.5              |      | 5.3         |      | 7.8         |      | 8.7       |      | 17.3           |      | 40.5 |      | 11.7 |      |
| 506412    | 323-09LTM  | SA      | 0.9    |      | 1                |      | 2.4         |      | 3.8         |      | 5.9       |      | 17.1           |      | 47.1 |      | 12.5 |      |
| 506413    | 323-09LTM  | SA      | 3      |      | 3.3              |      | 5.6         |      | 7.6         |      | 7         |      | 16             |      | 42.5 |      | 11.2 |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 506511    | 324-09LTM  | SA      | 1.8    |      | 4.3              |      | 5.8         |      | 8.7         |      | 8.1       |      | 14.3           |      | 38.6 |      | 17.9 |      |
| 506512    | 324-09LTM  | SA      | 2.2    |      | 5.5              |      | 7.7         |      | 10          |      | 8.2       |      | 13.2           |      | 38.6 |      | 13.9 |      |
| 506513    | 324-09LTM  | SA      | 0.5    |      | 2.8              |      | 4           |      | 6.6         |      | 6.9       |      | 14.5           |      | 49.6 |      | 15   |      |
| 506611    | 325-09LTM  | SA      | 2.3    |      | 4.8              |      | 9.4         |      | 17.3        |      | 12.1      |      | 13.6           |      | 27.9 |      | 9.1  |      |
| 506612    | 325-09LTM  | SA      | 1.1    |      | 2.6              |      | 6.5         |      | 14.3        |      | 11.5      |      | 14.7           |      | 29.7 |      | 8.5  |      |
| 506613    | 325-09LTM  | SA      | 0.8    |      | 2.1              |      | 6           |      | 12.2        |      | 11.1      |      | 14.8           |      | 38.7 |      | 14.1 |      |
| 506711    | 331-09LTM  | SA      | 0.4    |      | 1.1              |      | 2.9         |      | 3.5         |      | 2.1       |      | 11.6           |      | 57.9 |      | 20.4 |      |
| 506712    | 331-09LTM  | SA      | 1      |      | 1.8              |      | 2.5         |      | 3.4         |      | 2.9       |      | 9.1            |      | 50.6 |      | 25.8 |      |
| 506713    | 331-09LTM  | SA      | 0.1    |      | 0.4              |      | 2           |      | 3.4         |      | 2.2       |      | 9.7            |      | 53.5 |      | 28.6 |      |
| 506811    | 332-09LTM  | SA      | 0.8    |      | 5.3              |      | 13.5        |      | 37          |      | 21.8      |      | 9.4            |      | 9.4  |      | 2.6  |      |
| 506812    | 332-09LTM  | SA      | 0.7    |      | 4.7              |      | 10.4        |      | 30.8        |      | 21.6      |      | 11.7           |      | 15.8 |      | 4.1  |      |
| 506813    | 332-09LTM  | SA      | 0.2    |      | 4.7              |      | 11          |      | 34.6        |      | 20        |      | 10.7           |      | 14.2 |      | 4.5  |      |
| 506911    | 333-09LTM  | SA      | 13.5   |      | 8.4              |      | 5.6         |      | 4.2         |      | 2.4       |      | 9.5            |      | 29.8 |      | 8.1  |      |
| 506912    | 333-09LTM  | SA      | 14.8   |      | 10.3             |      | 9           |      | 7.8         |      | 3.8       |      | 8.4            |      | 22.4 |      | 6    |      |
| 506913    | 333-09LTM  | SA      | 7.1    |      | 3.7              |      | 1.4         |      | 1.4         |      | 0.9       |      | 10.6           |      | 32.6 |      | 8.7  |      |
| 507011    | 334-09LTM  | SA      | 4.5    |      | 6.8              |      | 5.1         |      | 6.9         |      | 7.5       |      | 12.1           |      | 36   |      | 14.7 |      |
| 507012    | 334-09LTM  | SA      | 1.8    |      | 4                |      | 5           |      | 8.4         |      | 10.1      |      | 16.7           |      | 40.7 |      | 12.4 |      |
| 507013    | 334-09LTM  | SA      | 2.4    |      | 3.6              |      | 3.1         |      | 6.9         |      | 9.1       |      | 15.8           |      | 42.5 |      | 14.4 |      |
| 507111    | 335-09LTM  | SA      | 3.7    |      | 7.4              |      | 11.3        |      | 21.8        |      | 9.4       |      | 11.5           |      | 26.1 |      | 6.6  |      |
| 507112    | 335-09LTM  | SA      | 2.9    |      | 6.7              |      | 9.3         |      | 25.7        |      | 9.8       |      | 10.1           |      | 24.9 |      | 5.6  |      |
| 507113    | 335-09LTM  | SA      | 3.6    |      | 4.9              |      | 11.3        |      | 20.1        |      | 5.9       |      | 10.7           |      | 31.5 |      | 9    |      |
| 507211    | 338-09LTM  | SA      | 0.1    | U    | 0.1              |      | 0.1         |      | 0.5         |      | 1.6       |      | 12.9           |      | 56.8 |      | 28   |      |
| 507212    | 338-09LTM  | SA      | 0.1    |      | 0.2              |      | 0.2         |      | 0.8         |      | 3.3       |      | 13.1           |      | 53.6 |      | 28.7 |      |
| 507213    | 338-09LTM  | SA      | 0.5    |      | 0.5              |      | 0.4         |      | 1.4         |      | 3.8       |      | 13.7           |      | 52.9 |      | 25.3 |      |

| Sample ID | Station ID | QC Code | Gravel |      | Very Course Sand |      | Course Sand |      | Medium Sand |      | Fine Sand |      | Very Fine Sand |      | Silt |      | Clay |      |
|-----------|------------|---------|--------|------|------------------|------|-------------|------|-------------|------|-----------|------|----------------|------|------|------|------|------|
|           |            |         | %      | Qual | %                | Qual | %           | Qual | %           | Qual | %         | Qual | %              | Qual | %    | Qual | %    | Qual |
| 507311    | 339-09LTM  | SA      | 0.1    | U    | 0.1              |      | 0.2         |      | 0.6         |      | 2.8       |      | 13.7           |      | 48.1 |      | 34.5 |      |
| 507312    | 339-09LTM  | SA      | 0.1    | U    | 0.1              |      | 0.2         |      | 0.6         |      | 0.4       |      | 14.5           |      | 55.4 |      | 28.8 |      |
| 507313    | 339-09LTM  | SA      | 0.1    | U    | 0.1              |      | 0.2         |      | 0.5         |      | 2.7       |      | 16.9           |      | 52.7 |      | 26.9 |      |
| 507411    | 340-09LTM  | SA      | 0.1    | U    | 0.2              |      | 0.5         |      | 1           |      | 2         |      | 9.9            |      | 41.5 |      | 44.9 |      |
| 507412    | 340-09LTM  | SA      | 0.1    | U    | 0.4              |      | 0.4         |      | 1           |      | 2.2       |      | 13.3           |      | 51.7 |      | 31   |      |
| 507413    | 340-09LTM  | SA      | 0.1    | U    | 0.8              |      | 1.4         |      | 2.2         |      | 3.3       |      | 13.7           |      | 50.7 |      | 27.9 |      |
| 507511    | 341-09LTM  | SA      | 1.4    |      | 4.9              |      | 18.2        |      | 24.8        |      | 22.1      |      | 11.2           |      | 11.6 |      | 3.3  |      |
| 507512    | 341-09LTM  | SA      | 0.5    |      | 3.4              |      | 17.9        |      | 25.7        |      | 20.2      |      | 12.5           |      | 15.1 |      | 4.6  |      |
| 507513    | 341-09LTM  | SA      | 0.9    |      | 5.2              |      | 18          |      | 22.5        |      | 21.6      |      | 11.9           |      | 14.7 |      | 2.9  |      |
| 507611    | 345-09LTM  | SA      | 0.1    | U    | 0.3              |      | 0.2         |      | 0.7         |      | 0.6       |      | 14.9           |      | 54.4 |      | 28.9 |      |
| 507612    | 345-09LTM  | SA      | 0.1    | U    | 0.1              | U    | 0.4         |      | 0.3         |      | 0.7       |      | 14.3           |      | 57.2 |      | 27.1 |      |
| 507613    | 345-09LTM  | SA      | 0.1    | U    | 0.1              |      | 0.2         |      | 0.4         |      | 0.6       |      | 14.7           |      | 52.8 |      | 31.2 |      |
| 507711    | 346-09LTM  | SA      | 0.3    |      | 1.3              |      | 1.6         |      | 24.8        |      | 48.6      |      | 14.4           |      | 7.1  |      | 1.5  |      |
| 507712    | 346-09LTM  | SA      | 0.2    |      | 1.2              |      | 4.8         |      | 17.2        |      | 1.1       |      | 62.1           |      | 9.4  |      | 2.4  |      |
| 507713    | 346-09LTM  | SA      | 0.2    |      | 0.6              |      | 0.8         |      | 27          |      | 45        |      | 14.2           |      | 9.5  |      | 2.6  |      |
| 507811    | 349-09LTM  | SA      | 1.3    |      | 6.6              |      | 6.6         |      | 10.3        |      | 12.1      |      | 27.8           |      | 27.9 |      | 6.9  |      |
| 507812    | 349-09LTM  | SA      | 0.4    |      | 3.4              |      | 5.9         |      | 6.1         |      | 9.8       |      | 31.2           |      | 34.2 |      | 8.3  |      |
| 507813    | 349-09LTM  | SA      | 3.1    |      | 5.8              |      | 6.5         |      | 8.9         |      | 10.7      |      | 30.1           |      | 26.6 |      | 7.2  |      |
| 507911    | 352-09LTM  | SA      | 5.2    |      | 9.7              |      | 14.4        |      | 25.4        |      | 4.5       |      | 5.6            |      | 11.3 |      | 2.3  |      |
| 507912    | 352-09LTM  | SA      | 2.4    |      | 23.6             |      | 23.1        |      | 23.4        |      | 7.7       |      | 6.3            |      | 6    |      | 1.3  |      |

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**APPENDIX I. GRAIN SIZE LABORATORY REPORTS**

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## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912906  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/02/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912906-01                | 500111           | NEW BEDFORD, MA            | 09/24/09 11:19                  |
| L0912906-02                | 500112           | NEW BEDFORD, MA            | 09/24/09 11:19                  |
| L0912906-03                | 500113           | NEW BEDFORD, MA            | 09/24/09 11:19                  |
| L0912906-04                | 500126           | NEW BEDFORD, MA            | 09/24/09 11:23                  |
| L0912906-05                | 500211           | NEW BEDFORD, MA            | 09/24/09 10:20                  |
| L0912906-06                | 500212           | NEW BEDFORD, MA            | 09/24/09 10:20                  |
| L0912906-07                | 500213           | NEW BEDFORD, MA            | 09/24/09 10:20                  |
| L0912906-08                | 500226           | NEW BEDFORD, MA            | 09/24/09 10:25                  |
| L0912906-09                | 500311           | NEW BEDFORD, MA            | 09/24/09 12:43                  |
| L0912906-10                | 500312           | NEW BEDFORD, MA            | 09/24/09 12:13                  |
| L0912906-11                | 500313           | NEW BEDFORD, MA            | 09/24/09 12:13                  |
| L0912906-12                | 500326           | NEW BEDFORD, MA            | 09/24/09 12:25                  |
| L0912906-13                | 500411           | NEW BEDFORD, MA            | 09/24/09 14:28                  |
| L0912906-14                | 500412           | NEW BEDFORD, MA            | 09/24/09 14:28                  |
| L0912906-15                | 500413           | NEW BEDFORD, MA            | 09/24/09 14:28                  |
| L0912906-16                | 500426           | NEW BEDFORD, MA            | 09/24/09 14:34                  |
| L0912906-17                | 500511           | NEW BEDFORD, MA            | 09/24/09 15:33                  |
| L0912906-18                | 500512           | NEW BEDFORD, MA            | 09/24/09 15:33                  |
| L0912906-19                | 500513           | NEW BEDFORD, MA            | 09/24/09 15:33                  |
| L0912906-20                | 500526           | NEW BEDFORD, MA            | 09/24/09 15:38                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 14, 2009. The report was ammended to include revised Grain Size data.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

*Nancy A. Rose*

Title: Technical Director/Representative

Date: 02/02/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-01  
**Client ID:** 500111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 11:19  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 30.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-02  
**Client ID:** 500112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 11:19  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.800  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 56.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-03  
**Client ID:** 500113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 11:19  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 57.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-04  
**Client ID:** 500126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 11:23  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 54.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-05  
**Client ID:** 500211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 10:20  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.70   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 36.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 18.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-06  
**Client ID:** 500212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 10:20  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 39.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-07  
**Client ID:** 500213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 10:20  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 40.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-08  
**Client ID:** 500226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 10:25  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 37.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 18.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-09  
**Client ID:** 500311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 12:43  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 47.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-10  
**Client ID:** 500312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 12:13  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 41.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-11  
**Client ID:** 500313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 12:13  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.70   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 15.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 30.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 9.70   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-12  
**Client ID:** 500326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 12:25  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 36.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-13  
**Client ID:** 500411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 14:28  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.70   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 30.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-14  
**Client ID:** 500412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 14:28  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.70   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.40   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 48.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-15  
**Client ID:** 500413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 14:28  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.200  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 54.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 29.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-16  
**Client ID:** 500426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 14:34  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 27.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-17  
**Client ID:** 500511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 15:33  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 39.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 26.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-18  
**Client ID:** 500512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 15:33  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 27.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-19  
**Client ID:** 500513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 15:33  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 53.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912906-20  
**Client ID:** 500526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 15:38  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.40   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.40   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 25.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912906

**Report Date:** 02/02/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG382093-1 QC Sample: L0912906-20 Client ID: 500526 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | ND            | ND               | %     | NC  |      | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 1.4           | 1.80             | %     | 25  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 5.4           | 5.70             | %     | 5   |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 5.6           | 5.70             | %     | 2   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 4.0           | 3.60             | %     | 11  |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 12.5          | 13.0             | %     | 4   |      | 20         |
| Silt - (1.95-62.5 um)  | 45.7          | 49.1             | %     | 7   |      | 20         |
| Clay - (<1.95 um)  | 25.4          | 21.1             | %     | 18  |      | 20         |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

### Sample Receipt and Container Information

Were project specific reporting limits specified? YES

#### Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| A      | Absent       |

#### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912906-01A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-02A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-03A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-04A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-05A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-06A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-07A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-08A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912906

Report Date: 02/02/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912906-09A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-10A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-11A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-12A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-13A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-14A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-15A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-16A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-17A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-18A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912906

Report Date: 02/02/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912906-19A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-20A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912906-20B | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-DUP()   |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912906  
**Report Date:** 02/02/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500111  
 Sample Number: L0912906-01  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 9.40  
 Tare Wt. = 4.08  
 Minus #200 from wash = 84.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 33.65                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 405.68                  | 405.52               | 99.5          | 0.5              |
|                             |              | #40                | 359.90                  | 359.28               | 97.7          | 2.3              |
|                             |              | #60                | 366.89                  | 366.26               | 95.8          | 4.2              |
|                             |              | #140               | 344.30                  | 342.93               | 91.7          | 8.3              |
|                             |              | #200               | 346.22                  | 345.32               | 89.1          | 10.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 89.1  
 Weight of hydrometer sample = 33.65  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 56.2          | 43.8             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 47.7          | 52.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 39.2          | 60.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 34.9          | 65.1             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0067         | 30.7          | 69.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 30.7          | 69.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 30.7          | 69.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.4     | 1.5  | 2.3  | 3.3  | 11.2    | 18.7  | 27.4 | 12.0 | 9.3  | 1.9     | 50.6  | 30.7 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 |                 | 0.0253          | 0.0380          | 0.0607          | 0.0682          | 0.0847          | 0.2108          |

| Fineness Modulus |
|------------------|
| 0.12             |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |          |     |         |        |         |        |          |         |      |      |      |         |      |      |      |        |         |
|------------------|----------|-----|---------|--------|---------|--------|----------|---------|------|------|------|---------|------|------|------|--------|---------|
| %                | Boulders | %   | Cobbles | %      | Pebbles | %      | Granules | % Sand  |      |      |      | % Silt  |      |      |      | % Clay |         |
|                  |          |     |         |        |         |        |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○                | 0.0      | 0.0 | 0.0     | 0.0    | 0.0     | 0.0    | 0.0      | 0.1     | 0.5  | 0.8  | 1.8  | 12.5    | 33.6 | 8.1  | 12.6 | 1.8    | 28.2    |
| ×                | LL       | PL  | D85     | D60    | D50     | D30    | D15      | D10     | Cc   | Cu   |      |         |      |      |      |        |         |
| ○                |          |     | 0.0633  | 0.0404 | 0.0287  | 0.0078 |          |         |      |      |      |         |      |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912906    **Client:** Woods Hole Group  
**Project:** New Bedford Harbor Long Term Monitoring  
  
**Source of Sample:** 500112    **Sample Number:** L0912906-02  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500112  
 Sample Number: L0912906-02  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 7.27  
 Tare Wt. = 4.01  
 Minus #200 from wash = 91.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 38.78                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.16                  | 482.16               | 100.0         | 0.0              |
|                             |              | #20                | 411.25                  | 411.21               | 99.9          | 0.1              |
|                             |              | #40                | 378.16                  | 377.92               | 99.3          | 0.7              |
|                             |              | #60                | 370.28                  | 370.01               | 98.6          | 1.4              |
|                             |              | #140               | 348.17                  | 347.33               | 96.4          | 3.6              |
|                             |              | #200               | 347.34                  | 346.58               | 94.5          | 5.5              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 94.5  
 Weight of hydrometer sample = 38.78  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 51.7          | 48.3             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 47.8          | 52.2             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 39.9          | 60.1             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 32.1          | 67.9             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0067         | 28.2          | 71.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 28.2          | 71.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 28.2          | 71.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.1     | 0.5  | 0.8  | 1.8  | 12.5    | 15.7  | 33.6 | 8.1  | 12.6 | 1.8     | 56.1  | 28.2 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0078 | 0.0287 | 0.0404 | 0.0578 | 0.0633 | 0.0692 | 0.0826 |

| Fineness Modulus |
|------------------|
| 0.04             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500113  
 Sample Number: L0912906-03  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 11.06  
 Tare Wt. = 4.01  
 Minus #200 from wash = 85.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 47.85                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 405.73                  | 405.52               | 99.6          | 0.4              |
|                             |              | #40                | 360.02                  | 359.28               | 98.0          | 2.0              |
|                             |              | #60                | 366.97                  | 366.26               | 96.5          | 3.5              |
|                             |              | #140               | 344.61                  | 342.93               | 93.0          | 7.0              |
|                             |              | #200               | 346.51                  | 345.32               | 90.5          | 9.5              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 90.5  
 Weight of hydrometer sample = 47.85  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 46.2          | 53.8             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 37.1          | 62.9             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 34.1          | 65.9             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 25.0          | 75.0             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 25.0          | 75.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 21.9          | 78.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 21.9          | 78.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.4     | 1.2  | 1.9  | 2.8  | 13.4    | 19.7  | 36.1 | 9.1  | 10.1 | 2.3     | 57.6  | 22.7 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0112 | 0.0365 | 0.0436 | 0.0622 | 0.0680 | 0.0743 | 0.1720 |

| Fineness Modulus |
|------------------|
| 0.10             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500126  
 Sample Number: L0912906-04  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 14.53  
 Tare Wt. = 4.03  
 Minus #200 from wash = 77.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 46.24                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.22                  | 482.16               | 99.9          | 0.1              |
|                             |              | #20                | 411.50                  | 411.21               | 99.2          | 0.8              |
|                             |              | #40                | 378.90                  | 377.92               | 97.1          | 2.9              |
|                             |              | #60                | 370.94                  | 370.01               | 95.1          | 4.9              |
|                             |              | #140               | 349.66                  | 347.33               | 90.1          | 9.9              |
|                             |              | #200               | 348.13                  | 346.58               | 86.7          | 13.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 86.7  
 Weight of hydrometer sample = 46.24  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 45.8          | 54.2             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 36.8          | 63.2             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 30.8          | 69.2             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 27.7          | 72.3             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 24.7          | 75.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 21.7          | 78.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 21.7          | 78.3             |

## Fractional Components

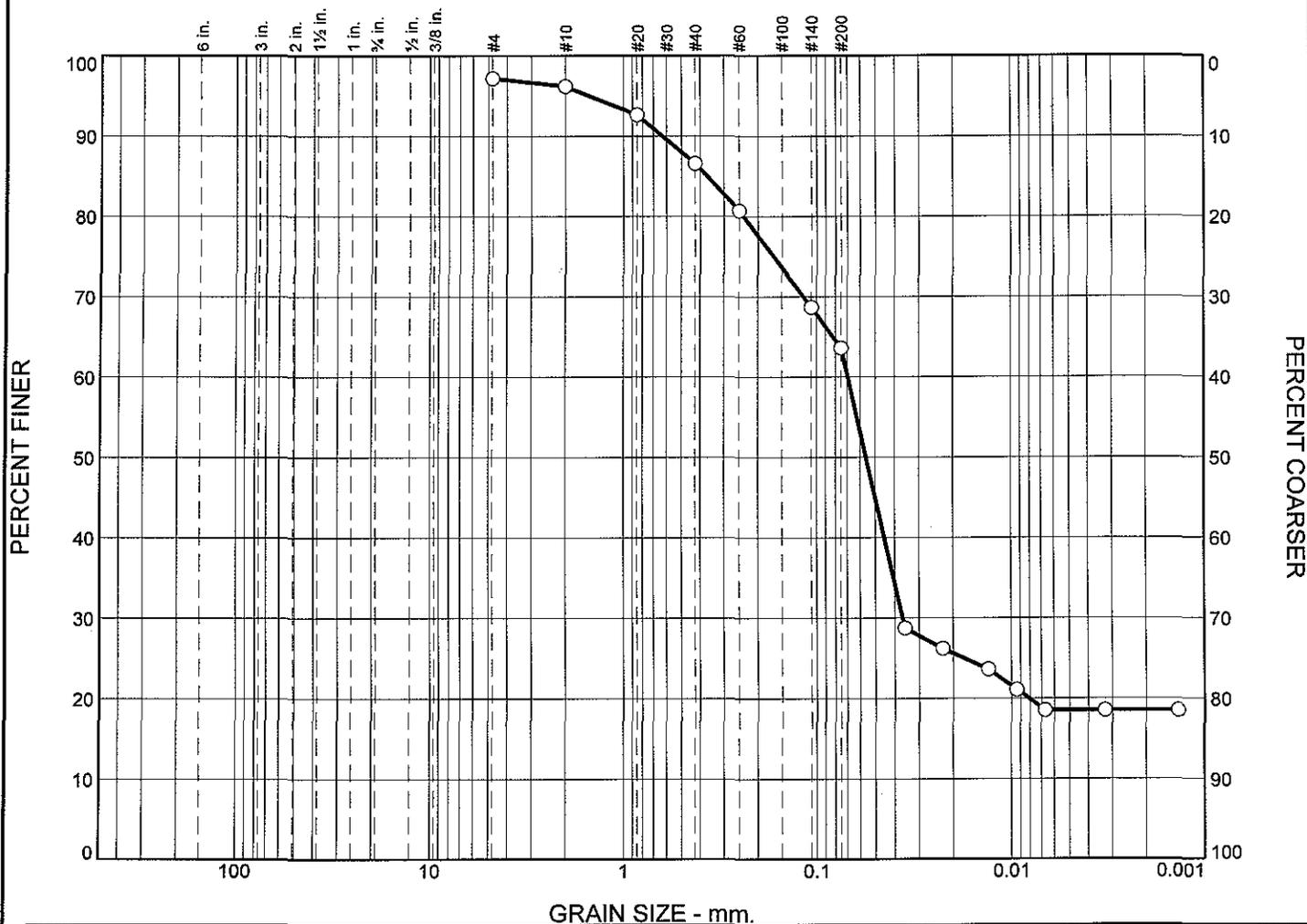
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.0     | 0.1      | 0.5     | 1.8  | 2.5  | 4.1  | 13.7    | 22.6  | 33.5 | 11.0 | 6.6  | 3.7     | 54.8 | 22.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0120          | 0.0370          | 0.0448          | 0.0659          | 0.0726          | 0.1052          | 0.2453          |

| Fineness Modulus |
|------------------|
| 0.15             |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |           |           |            |         |        |        |      |         |        |      |      |         |        |
|------------------|-----------|-----------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
| % Boulders       | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|                  |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○                |           |           | 0.8        | 2.9     | 5.3    | 7.3    | 9.7  | 15.9    | 27.1   | 3.6  | 4.8  | 1.1     | 18.5   |
| ×                | LL        | PL        | D85        | D60     | D50    | D30    | D15  | D10     | Cc     | Cu   |      |         |        |
| ○                |           |           | 0.3679     | 0.0694  | 0.0560 | 0.0364 |      |         |        |      |      |         |        |

| Material Description |  |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |  |      |        |

**Project No.** L0912906    **Client:** Woods Hole Group  
**Project:** New Bedford Harbor Long Term Monitoring  
 ○ **Source of Sample:** 500211    **Sample Number:** L0912906-05  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500211  
 Sample Number: L0912906-05  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.63  
 Tare Wt. = 4.08  
 Minus #200 from wash = 55.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 39.84                       | 0.00         | #4                 | 523.01                  | 521.88               | 97.2          | 2.8              |
|                             |              | #10                | 485.23                  | 484.84               | 96.2          | 3.8              |
|                             |              | #20                | 406.94                  | 405.52               | 92.6          | 7.4              |
|                             |              | #40                | 361.68                  | 359.28               | 86.6          | 13.4             |
|                             |              | #60                | 368.60                  | 366.26               | 80.7          | 19.3             |
|                             |              | #140               | 347.73                  | 342.93               | 68.7          | 31.3             |
|                             |              | #200               | 347.34                  | 345.32               | 63.6          | 36.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 63.6  
 Weight of hydrometer sample = 39.84  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 28.7          | 71.3             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 26.2          | 73.8             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 23.6          | 76.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 21.1          | 78.9             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 18.5          | 81.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 18.5          | 81.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 18.5          | 81.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.8      | 2.9     | 5.3  | 7.3  | 9.7  | 15.9    | 41.1  | 27.1 | 3.6  | 4.8  | 1.1     | 36.6 | 18.5  |

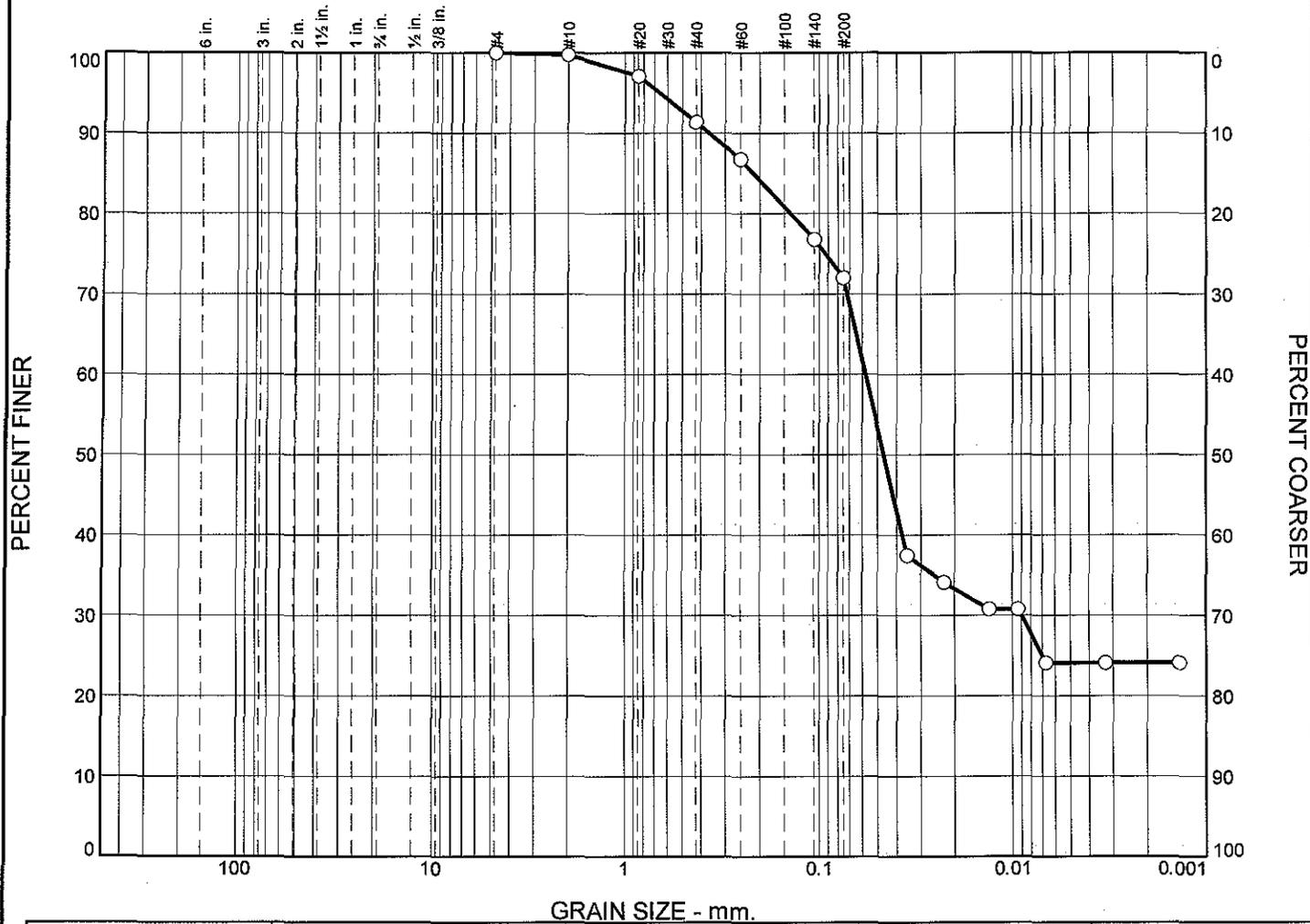
| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0082 | 0.0364 | 0.0560 | 0.0694 | 0.2375 | 0.3679 | 0.6287 | 1.5049 |

Fineness  
Modulus

0.67

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |            |           |                 |                 |                 |                 |                 |                 |                |                |      |      |         |        |
|------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                  | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|                  |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○                | 0.0        | 0.0       | 0.1             | 0.2             | 2.1             | 4.9             | 6.0             | 8.0             | 15.1           | 27.2           | 4.6  | 4.7  | 3.0     | 24.1   |
| ×                | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○                |            |           | 0.2155          | 0.0578          | 0.0466          | 0.0090          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                             |
|---|-----------------------------|
| <b>Project No.</b> L0912906 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Harbor Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 500212 <b>Sample Number:</b> L0912906-06 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500212  
 Sample Number: L0912906-06  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 16.00  
 Tare Wt. = 4.02  
 Minus #200 from wash = 65.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 34.64                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.25                  | 482.16               | 99.7          | 0.3              |
|                             |              | #20                | 412.12                  | 411.21               | 97.1          | 2.9              |
|                             |              | #40                | 379.92                  | 377.92               | 91.3          | 8.7              |
|                             |              | #60                | 371.61                  | 370.01               | 86.7          | 13.3             |
|                             |              | #140               | 350.77                  | 347.33               | 76.8          | 23.2             |
|                             |              | #200               | 348.24                  | 346.58               | 72.0          | 28.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 72.0  
 Weight of hydrometer sample = 34.64  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 37.4          | 62.6             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 34.1          | 65.9             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 30.8          | 69.2             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 30.8          | 69.2             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 24.1          | 75.9             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 24.1          | 75.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 24.1          | 75.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.1     | 0.2      | 2.1     | 4.9  | 6.0  | 8.0  | 15.1    | 36.1  | 27.2 | 4.6  | 4.7  | 3.0     | 39.5 | 24.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0090          | 0.0466          | 0.0578          | 0.1399          | 0.2155          | 0.3644          | 0.6595          |

| Fineness Modulus |
|------------------|
| 0.39             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500213  
 Sample Number: L0912906-07  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.72  
 Tare Wt. = 4.02  
 Minus #200 from wash = 57.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 44.09                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 485.02                  | 484.84               | 99.6          | 0.4              |
|                             |              | #20                | 407.09                  | 405.52               | 96.0          | 4.0              |
|                             |              | #40                | 361.76                  | 359.28               | 90.4          | 9.6              |
|                             |              | #60                | 368.59                  | 366.26               | 85.1          | 14.9             |
|                             |              | #140               | 348.43                  | 342.93               | 72.6          | 27.4             |
|                             |              | #200               | 347.89                  | 345.32               | 66.8          | 33.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 66.8  
 Weight of hydrometer sample = 44.09  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 29.7          | 70.3             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 27.3          | 72.7             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 22.4          | 77.6             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 20.0          | 80.0             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 17.6          | 82.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 17.6          | 82.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 17.6          | 82.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       |      | Silt |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.3      | 2.9     | 5.0  | 6.6  | 10.1 | 17.1    | 41.7  | 28.9 | 5.0  | 5.4  | 1.0     | 40.3  | 17.6 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0094          | 0.0353          | 0.0532          | 0.0652          | 0.1758          | 0.2479          | 0.4080          | 0.7486          |

| Fineness Modulus |
|------------------|
| 0.45             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500226  
 Sample Number: L0912906-08  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.86  
 Tare Wt. = 4.08  
 Minus #200 from wash = 53.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 40.48                       | 0.00         | #4                 | 521.32                  | 520.95               | 99.1          | 0.9              |
|                             |              | #10                | 482.35                  | 482.16               | 98.6          | 1.4              |
|                             |              | #20                | 413.22                  | 411.21               | 93.7          | 6.3              |
|                             |              | #40                | 380.89                  | 377.92               | 86.3          | 13.7             |
|                             |              | #60                | 372.35                  | 370.01               | 80.5          | 19.5             |
|                             |              | #140               | 351.90                  | 347.33               | 69.2          | 30.8             |
|                             |              | #200               | 348.71                  | 346.58               | 64.0          | 36.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 64.0  
 Weight of hydrometer sample = 40.48  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 33.5          | 66.5             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 31.0          | 69.0             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 25.9          | 74.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 23.4          | 76.6             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 20.8          | 79.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 18.3          | 81.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 18.3          | 81.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 4.0     | 6.6  | 7.5  | 9.1  | 14.6    | 41.8  | 23.9 | 5.3  | 5.6  | 3.1     | 37.9  | 18.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0053          | 0.0200          | 0.0527          | 0.0678          | 0.2401          | 0.3767          | 0.6020          | 1.0724          |

Fineness Modulus

0.60

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500311  
 Sample Number: L0912906-09  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 26.26  
 Tare Wt. = 4.09  
 Minus #200 from wash = 62.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 59.28                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.95                  | 484.84               | 99.8          | 0.2              |
|                             |              | #20                | 407.17                  | 405.52               | 97.0          | 3.0              |
|                             |              | #40                | 361.52                  | 359.28               | 93.3          | 6.7              |
|                             |              | #60                | 368.24                  | 366.26               | 89.9          | 10.1             |
|                             |              | #140               | 349.93                  | 342.93               | 78.1          | 21.9             |
|                             |              | #200               | 349.36                  | 345.32               | 71.3          | 28.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 71.3  
 Weight of hydrometer sample = 59.28  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0160         | 1.0162            | 0.0133 | 13.0 | 12.9       | 0.0338         | 31.3          | 68.7             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 25.5          | 74.5             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 19.7          | 80.3             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 15.9          | 84.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 15.9          | 84.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 13.9          | 86.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 13.9          | 86.1             |

## Fractional Components

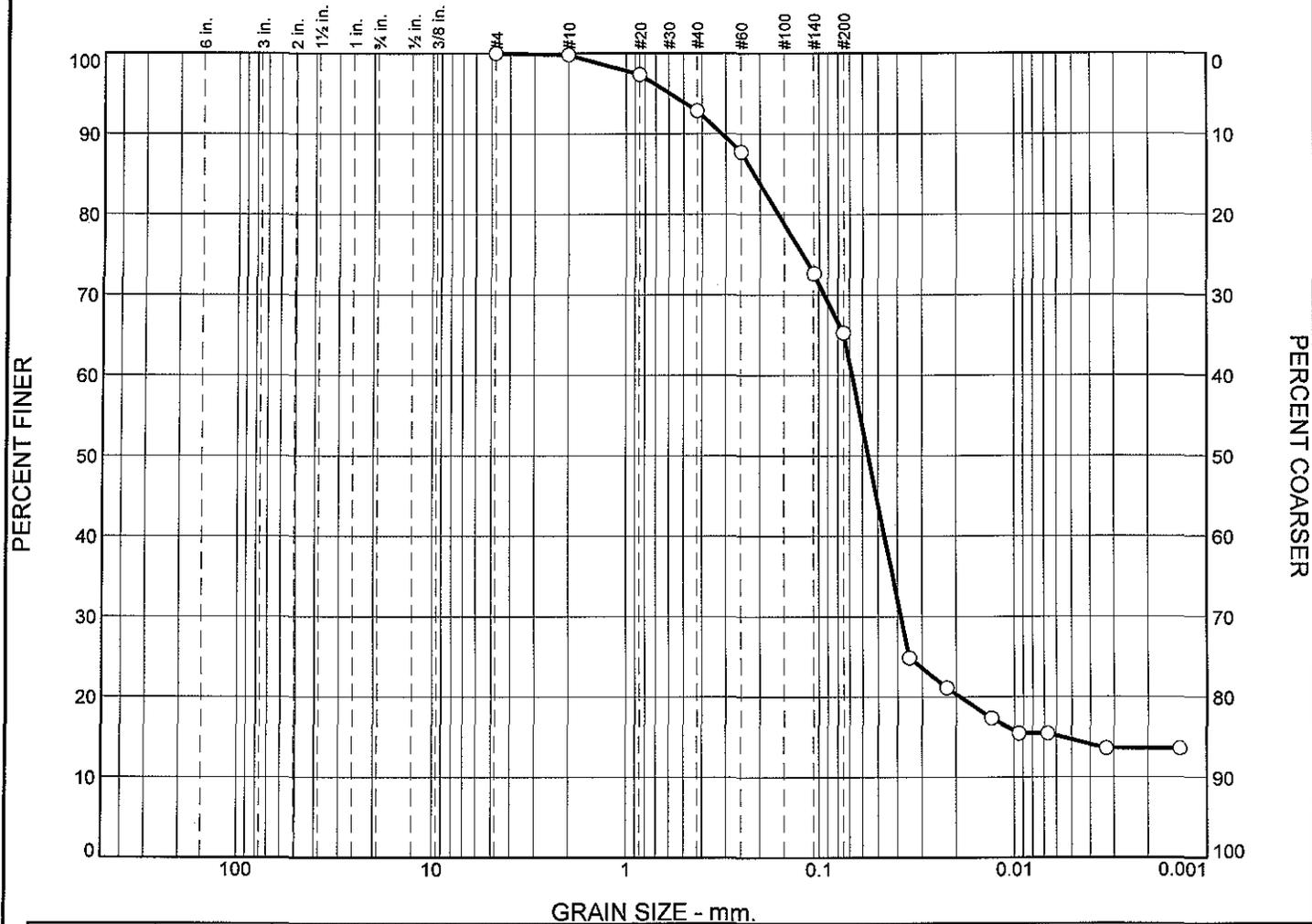
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.2      | 2.2     | 3.5  | 4.2  | 9.5  | 18.2    | 37.6  | 32.0 | 8.5  | 5.8  | 1.5     | 47.8  | 14.4 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0049          | 0.0134          | 0.0306          | 0.0490          | 0.0599          | 0.1217          | 0.1750          | 0.2535          | 0.5856          |

|                  |
|------------------|
| Fineness Modulus |
| 0.33             |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |          |   |         |   |                 |   |                 |         |                 |      |                 |         |                 |      |                 |        |                |                |
|------------------|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|--------|----------------|----------------|
| %                | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 | % Silt  |                 |      |                 | % Clay |                |                |
|                  |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |        | V. Fine        |                |
| ○                | 0.0      |   | 0.0     |   | 0.0             |   | 0.2             | 2.0     | 3.9             | 6.2  | 12.2            | 19.8    | 31.8            | 5.4  | 3.1             | 1.4    | 14.0           |                |
| ×                | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> | C <sub>u</sub> |
| ○                |          |   |         |   | 0.2139          |   | 0.0679          |         | 0.0561          |      | 0.0384          |         | 0.0056          |      |                 |        |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912906    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Harbor Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500312    <b>Sample Number:</b> L0912906-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500312  
 Sample Number: L0912906-10  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 26.64  
 Tare Wt. = 4.01  
 Minus #200 from wash = 59.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.74                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.27                  | 482.16               | 99.8          | 0.2              |
|                             |              | #20                | 412.58                  | 411.21               | 97.3          | 2.7              |
|                             |              | #40                | 380.42                  | 377.92               | 92.9          | 7.1              |
|                             |              | #60                | 372.86                  | 370.01               | 87.7          | 12.3             |
|                             |              | #140               | 355.75                  | 347.33               | 72.6          | 27.4             |
|                             |              | #200               | 350.70                  | 346.58               | 65.2          | 34.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 65.2  
 Weight of hydrometer sample = 55.74  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 24.8          | 75.2             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 21.1          | 78.9             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 17.3          | 82.7             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 15.4          | 84.6             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 15.4          | 84.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 13.6          | 86.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 13.6          | 86.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.2      | 2.0     | 3.9  | 6.2  | 12.2 | 19.8    | 44.1  | 31.8 | 5.4  | 3.1  | 1.4     | 41.7  | 14.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0056          | 0.0193          | 0.0384          | 0.0561          | 0.0679          | 0.1610          | 0.2139          | 0.3159          | 0.5916          |

Fineness Modulus

0.39

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500313  
 Sample Number: L0912906-11  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.28  
 Tare Wt. = 4.06  
 Minus #200 from wash = 38.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.19                       | 0.00         | #4                 | 522.08                  | 521.88               | 99.6          | 0.4              |
|                             |              | #10                | 486.36                  | 484.84               | 96.9          | 3.1              |
|                             |              | #20                | 410.07                  | 405.52               | 88.6          | 11.4             |
|                             |              | #40                | 363.32                  | 359.28               | 81.3          | 18.7             |
|                             |              | #60                | 369.94                  | 366.26               | 74.7          | 25.3             |
|                             |              | #140               | 353.57                  | 342.93               | 55.4          | 44.6             |
|                             |              | #200               | 350.41                  | 345.32               | 46.1          | 53.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 46.1  
 Weight of hydrometer sample = 55.19  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 19.1          | 80.9             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 15.1          | 84.9             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 12.4          | 87.6             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 11.0          | 89.0             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0067         | 9.7           | 90.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 9.7           | 90.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 9.7           | 90.3             |

## Fractional Components

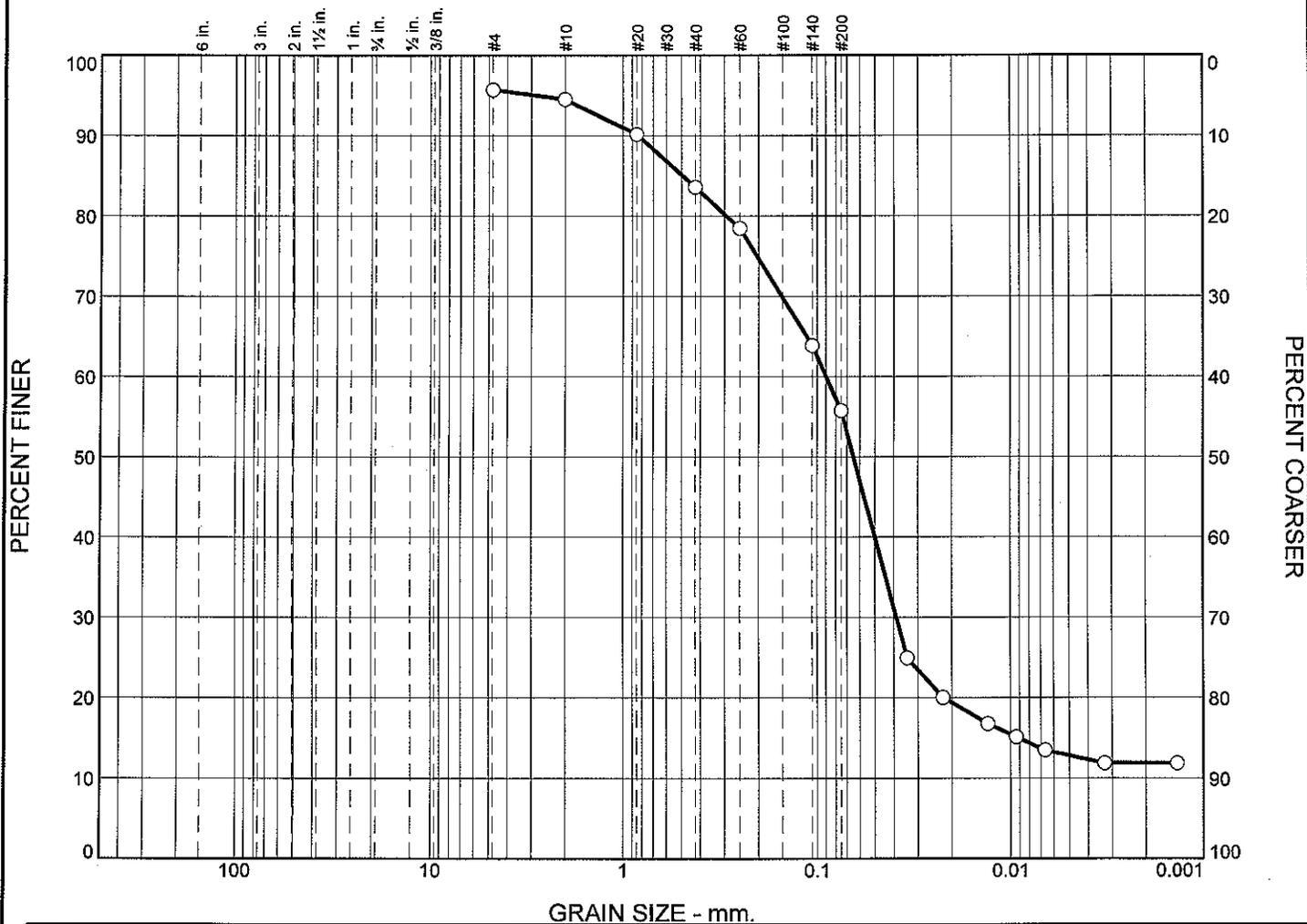
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 2.2      | 6.7     | 7.2  | 8.3  | 15.6 | 19.3    | 57.1  | 21.7 | 4.9  | 2.9  | 0.6     | 30.1 | 9.7   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0073          | 0.0222          | 0.0354          | 0.0471          | 0.0867          | 0.1302          | 0.3826          | 0.6022          | 0.9789          | 1.6449          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.86             | 17.94          | 2.35           |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |           |           |                 |                 |                 |                 |                 |                 |                |                |      |         |        |
|------------------|-----------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|---------|--------|
| % Boulders       | % Cobbles | % Pebbles | % Granules      | % Sand          |                 |                 |                 |                 | % Silt         |                |      |         | % Clay |
|                  |           |           |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine         | Crs.           | Med.           | Fine | V. Fine |        |
| ○                |           |           | 0.9             | 3.5             | 5.9             | 6.6             | 11.9            | 18.0            | 24.8           | 6.0            | 3.6  | 2.0     | 12.2   |
| ×                | LL        | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |         |        |
| ○                |           |           | 0.4945          | 0.0900          | 0.0648          | 0.0388          | 0.0091          |                 |                |                |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912906    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Harbor Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500326    <b>Sample Number:</b> L0912906-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500326  
 Sample Number: L0912906-12  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 32.55  
 Tare Wt. = 3.99  
 Minus #200 from wash = 47.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 54.62                       | 0.00         | #4                 | 523.31                  | 520.95               | 95.7          | 4.3              |
|                             |              | #10                | 482.81                  | 482.16               | 94.5          | 5.5              |
|                             |              | #20                | 413.58                  | 411.21               | 90.2          | 9.8              |
|                             |              | #40                | 381.52                  | 377.92               | 83.6          | 16.4             |
|                             |              | #60                | 372.80                  | 370.01               | 78.5          | 21.5             |
|                             |              | #140               | 355.31                  | 347.33               | 63.8          | 36.2             |
|                             |              | #200               | 351.02                  | 346.58               | 55.7          | 44.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 55.7  
 Weight of hydrometer sample = 54.62  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 24.9          | 75.1             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 20.0          | 80.0             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 16.7          | 83.3             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 15.1          | 84.9             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 13.5          | 86.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 11.8          | 88.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 11.8          | 88.2             |

## Fractional Components

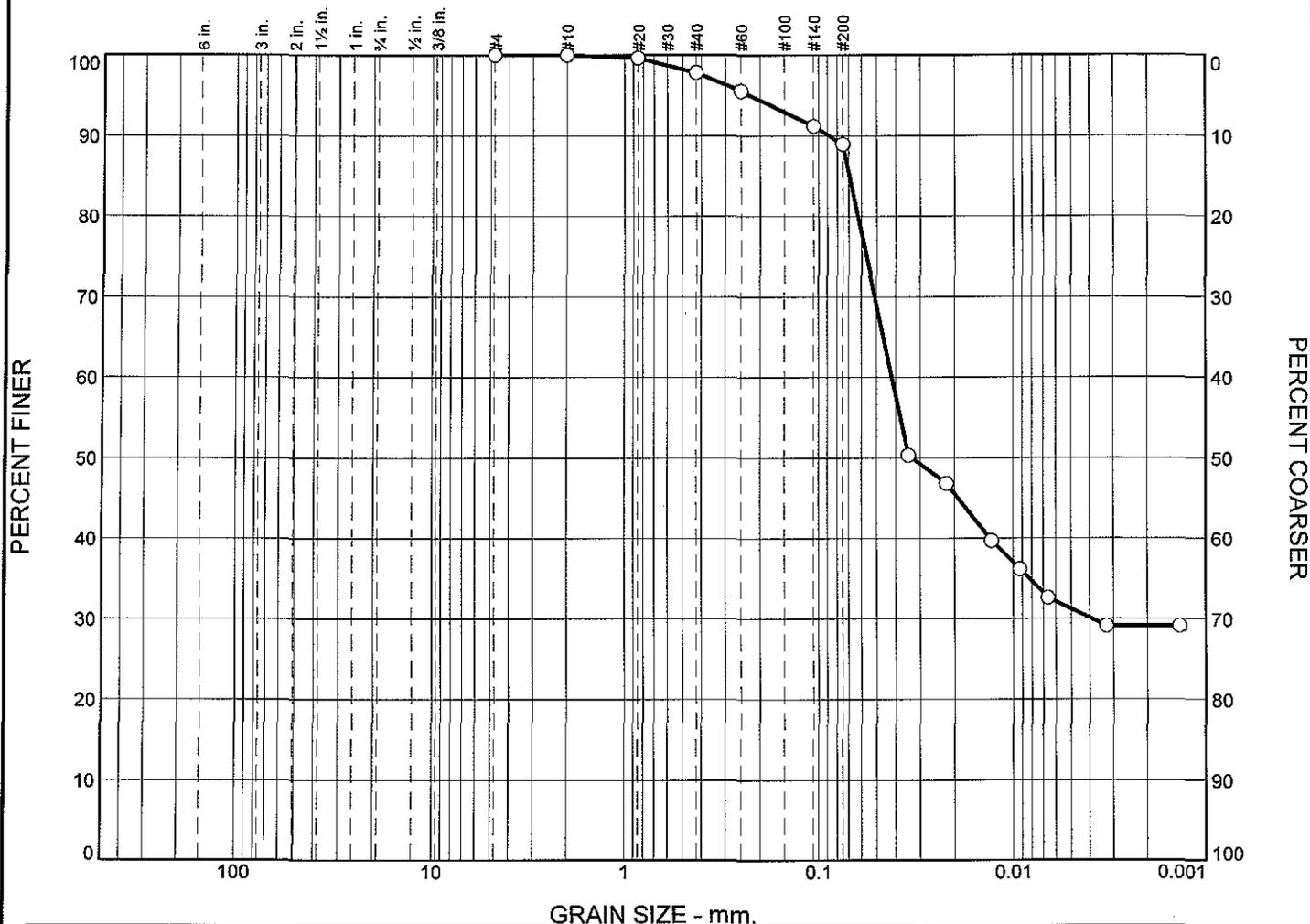
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.9      | 3.5     | 5.9  | 6.6  | 11.9 | 18.0    | 45.9  | 24.8 | 6.0  | 3.6  | 2.0     | 36.4 | 12.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0091          | 0.0222          | 0.0388          | 0.0648          | 0.0900          | 0.2936          | 0.4945          | 0.8367          | 2.8992          |

|                  |
|------------------|
| Fineness Modulus |
| 0.81             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0       | 0.0        | 0.3     | 1.5    | 2.7  | 3.5  | 12.1    | 30.4   | 7.3  | 7.8  | 4.4     | 30.0   |
| X | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.0693    | 0.0419     | 0.0330  | 0.0039 |      |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912906     **Client:** Woods Hole Group  
**Project:** New Bedford Harbor Long Term Monitoring  
  
 ○ **Source of Sample:** 500411     **Sample Number:** L0912906-13  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500411  
 Sample Number: L0912906-13  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 10.87  
 Tare Wt. = 4.07  
 Minus #200 from wash = 83.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 40.34                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 405.67                  | 405.52               | 99.6          | 0.4              |
|                             |              | #40                | 360.01                  | 359.28               | 97.8          | 2.2              |
|                             |              | #60                | 367.18                  | 366.26               | 95.5          | 4.5              |
|                             |              | #140               | 344.68                  | 342.93               | 91.2          | 8.8              |
|                             |              | #200               | 346.23                  | 345.32               | 88.9          | 11.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 88.9  
 Weight of hydrometer sample = 40.34  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 50.3          | 49.7             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 46.8          | 53.2             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 39.7          | 60.3             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 36.2          | 63.8             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 32.6          | 67.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 29.1          | 70.9             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 29.1          | 70.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.3     | 1.5  | 2.7  | 3.5  | 12.1    | 20.1  | 30.4 | 7.3  | 7.8  | 4.4     | 49.9  | 30.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0039          | 0.0330          | 0.0419          | 0.0626          | 0.0693          | 0.0882          | 0.2248          |

Fineness Modulus

0.12

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500412  
 Sample Number: L0912906-14  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 12.54  
 Tare Wt. = 4.05  
 Minus #200 from wash = 76.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 36.21                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.16                  | 482.16               | 100.0         | 0.0              |
|                             |              | #20                | 411.43                  | 411.21               | 99.4          | 0.6              |
|                             |              | #40                | 378.98                  | 377.92               | 96.5          | 3.5              |
|                             |              | #60                | 371.10                  | 370.01               | 93.5          | 6.5              |
|                             |              | #140               | 349.26                  | 347.33               | 88.1          | 11.9             |
|                             |              | #200               | 347.64                  | 346.58               | 85.2          | 14.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 85.2  
 Weight of hydrometer sample = 36.21  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 49.9          | 50.1             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 46.1          | 53.9             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 42.4          | 57.6             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 34.8          | 65.2             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 31.0          | 69.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 27.3          | 72.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 27.3          | 72.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.5     | 2.3  | 3.7  | 4.4  | 12.3    | 23.2  | 27.8 | 5.3  | 10.9 | 4.6     | 48.6 | 28.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0055          | 0.0348          | 0.0433          | 0.0670          | 0.0747          | 0.1434          | 0.3283          |

| Fineness Modulus |
|------------------|
| 0.18             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500413  
 Sample Number: L0912906-15  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.29  
 Tare Wt. = 4.04  
 Minus #200 from wash = 88.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 37.60                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 405.61                  | 405.52               | 99.8          | 0.2              |
|                             |              | #40                | 359.42                  | 359.28               | 99.4          | 0.6              |
|                             |              | #60                | 366.63                  | 366.26               | 98.4          | 1.6              |
|                             |              | #140               | 344.13                  | 342.93               | 95.2          | 4.8              |
|                             |              | #200               | 346.00                  | 345.32               | 93.4          | 6.6              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 93.4  
 Weight of hydrometer sample = 37.60  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 52.7          | 47.3             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 48.7          | 51.3             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 40.7          | 59.3             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 32.8          | 67.2             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 32.8          | 67.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 28.8          | 71.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 28.8          | 71.2             |

## Fractional Components

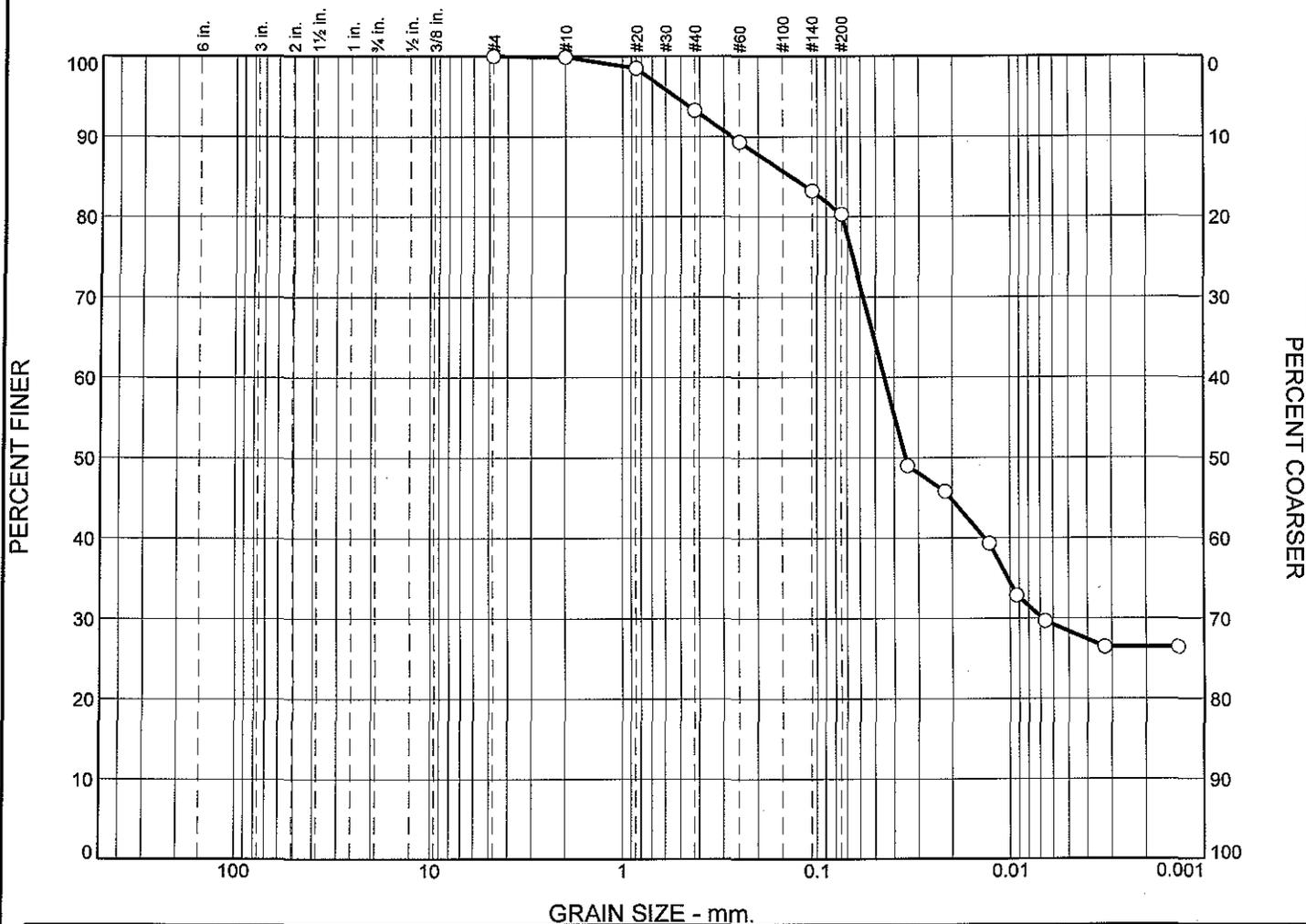
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.2     | 0.3  | 1.1  | 2.6  | 12.1    | 16.3  | 32.0 | 8.3  | 10.6 | 3.1     | 54.0  | 29.7 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0041 | 0.0256 | 0.0399 | 0.0582 | 0.0640 | 0.0703 | 0.1018 |

| Fineness Modulus |
|------------------|
| 0.05             |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |           |                 |                 |                 |                 |                 |                 |                |                |      |      |         |        |
|------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
| % Boulders       | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|                  |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| 0.0              | 0.0       | 0.0             | 0.1             | 1.1             | 4.3             | 5.2             | 4.9             | 11.3           | 24.8           | 6.6  | 10.4 | 4.0     | 27.3   |
| LL               | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| 0.0              | 0.0       | 0.1360          | 0.0450          | 0.0350          | 0.0068          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
|                      |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912906    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Harbor Long Term Monitoring</p> <p><b>Source of Sample:</b> 500426    <b>Sample Number:</b> L0912906-16</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   |                        |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500426  
 Sample Number: L0912906-16  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.05  
 Tare Wt. = 4.03  
 Minus #200 from wash = 72.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 40.05                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.21                  | 482.16               | 99.9          | 0.1              |
|                             |              | #20                | 411.76                  | 411.21               | 98.5          | 1.5              |
|                             |              | #40                | 380.02                  | 377.92               | 93.3          | 6.7              |
|                             |              | #60                | 371.58                  | 370.01               | 89.3          | 10.7             |
|                             |              | #140               | 349.78                  | 347.33               | 83.2          | 16.8             |
|                             |              | #200               | 347.75                  | 346.58               | 80.3          | 19.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 80.3  
 Weight of hydrometer sample = 40.05  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 49.0          | 51.0             |
| 5.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0218         | 45.8          | 54.2             |
| 15.00               | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0128         | 39.3          | 60.7             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 32.9          | 67.1             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 29.7          | 70.3             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 26.4          | 73.6             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 26.4          | 73.6             |

## Fractional Components

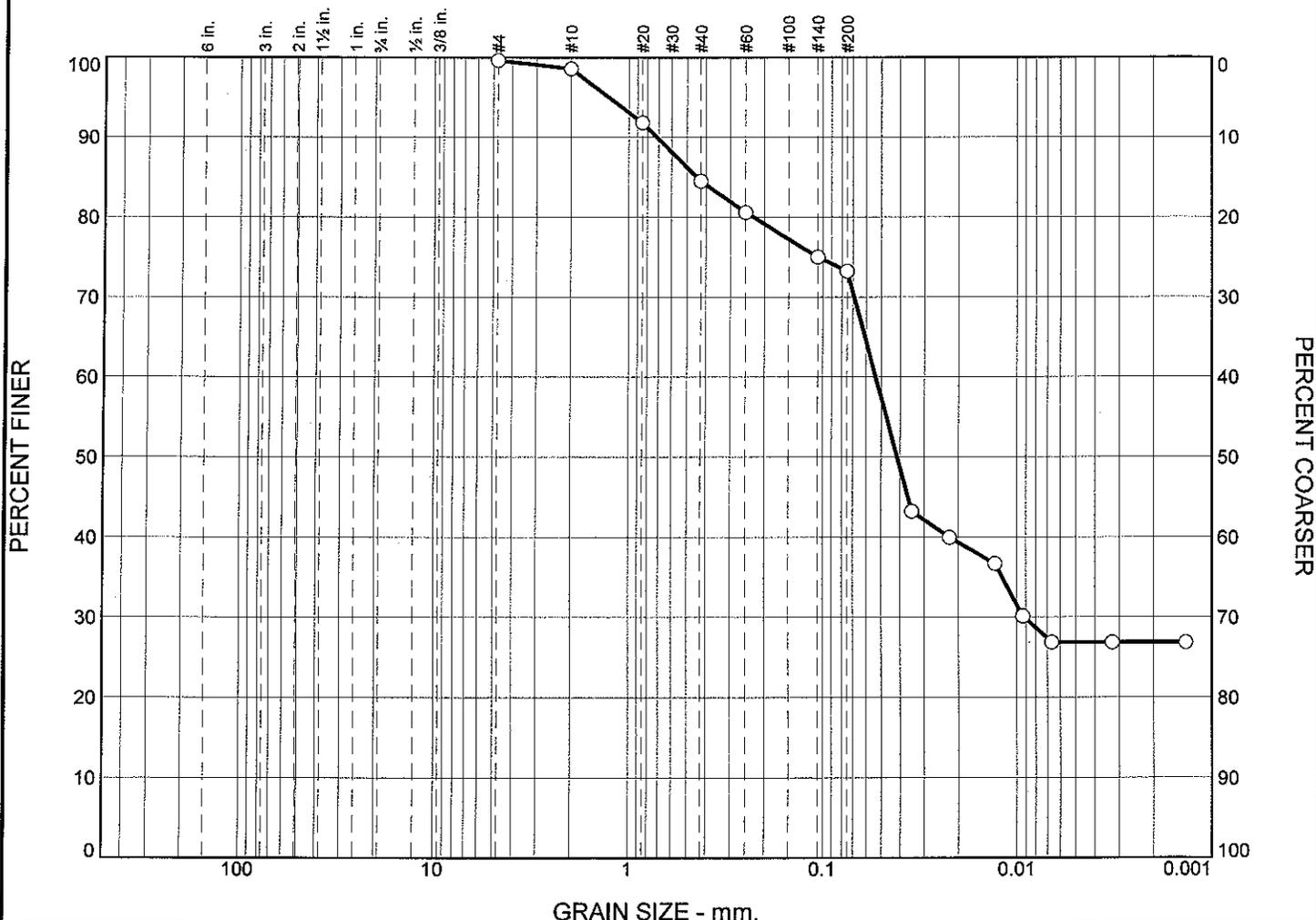
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.0     | 0.1      | 1.1     | 4.3  | 5.2  | 4.9  | 11.3    | 26.8  | 24.8 | 6.6  | 10.4 | 4.0     | 45.8 | 27.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0068          | 0.0350          | 0.0450          | 0.0744          | 0.1360          | 0.2734          | 0.5350          |

| Fineness Modulus |
|------------------|
| 0.29             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 0.8             | 5.5     | 6.9             | 5.6  | 4.5             | 10.0    | 23.7            | 4.6  | 9.4             | 1.5     | 26.9           |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.4455          |   | 0.0535          |         | 0.0414          |      | 0.0092          |         |                 |      |                 |         |                |  |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912906    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Harbor Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500511    <b>Sample Number:</b> L0912906-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

2/2/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500511  
 Sample Number: L0912906-17  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.80  
 Tare Wt. = 4.04  
 Minus #200 from wash = 67.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 35.94                       | 0.00         | #4                 | 522.02                  | 521.88               | 99.6          | 0.4              |
|                             |              | #10                | 485.21                  | 484.84               | 98.6          | 1.4              |
|                             |              | #20                | 407.95                  | 405.52               | 91.8          | 8.2              |
|                             |              | #40                | 361.91                  | 359.28               | 84.5          | 15.5             |
|                             |              | #60                | 367.67                  | 366.26               | 80.6          | 19.4             |
|                             |              | #140               | 344.94                  | 342.93               | 75.0          | 25.0             |
|                             |              | #200               | 345.96                  | 345.32               | 73.2          | 26.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 73.2  
 Weight of hydrometer sample = 35.94  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 43.2          | 56.8             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 39.9          | 60.1             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 36.7          | 63.3             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 30.1          | 69.9             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 26.9          | 73.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 26.9          | 73.1             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 26.9          | 73.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 5.5     | 6.9  | 5.6  | 4.5  | 10.0    | 32.5  | 23.7 | 4.6  | 9.4  | 1.5     | 39.2  | 26.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0092          | 0.0414          | 0.0535          | 0.2288          | 0.4455          | 0.7154          | 1.2712          |

| Fineness Modulus |
|------------------|
| 0.60             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500512  
 Sample Number: L0912906-18  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 13.79  
 Tare Wt. = 4.07  
 Minus #200 from wash = 71.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 34.55                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.16                  | 482.16               | 100.0         | 0.0              |
|                             |              | #20                | 411.71                  | 411.21               | 98.6          | 1.4              |
|                             |              | #40                | 380.06                  | 377.92               | 92.4          | 7.6              |
|                             |              | #60                | 371.51                  | 370.01               | 88.0          | 12.0             |
|                             |              | #140               | 349.30                  | 347.33               | 82.3          | 17.7             |
|                             |              | #200               | 347.36                  | 346.58               | 80.1          | 19.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 80.1  
 Weight of hydrometer sample = 34.55  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 45.4          | 54.6             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 41.7          | 58.3             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0131         | 38.0          | 62.0             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 30.6          | 69.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 30.6          | 69.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 26.8          | 73.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 26.8          | 73.2             |

## Fractional Components

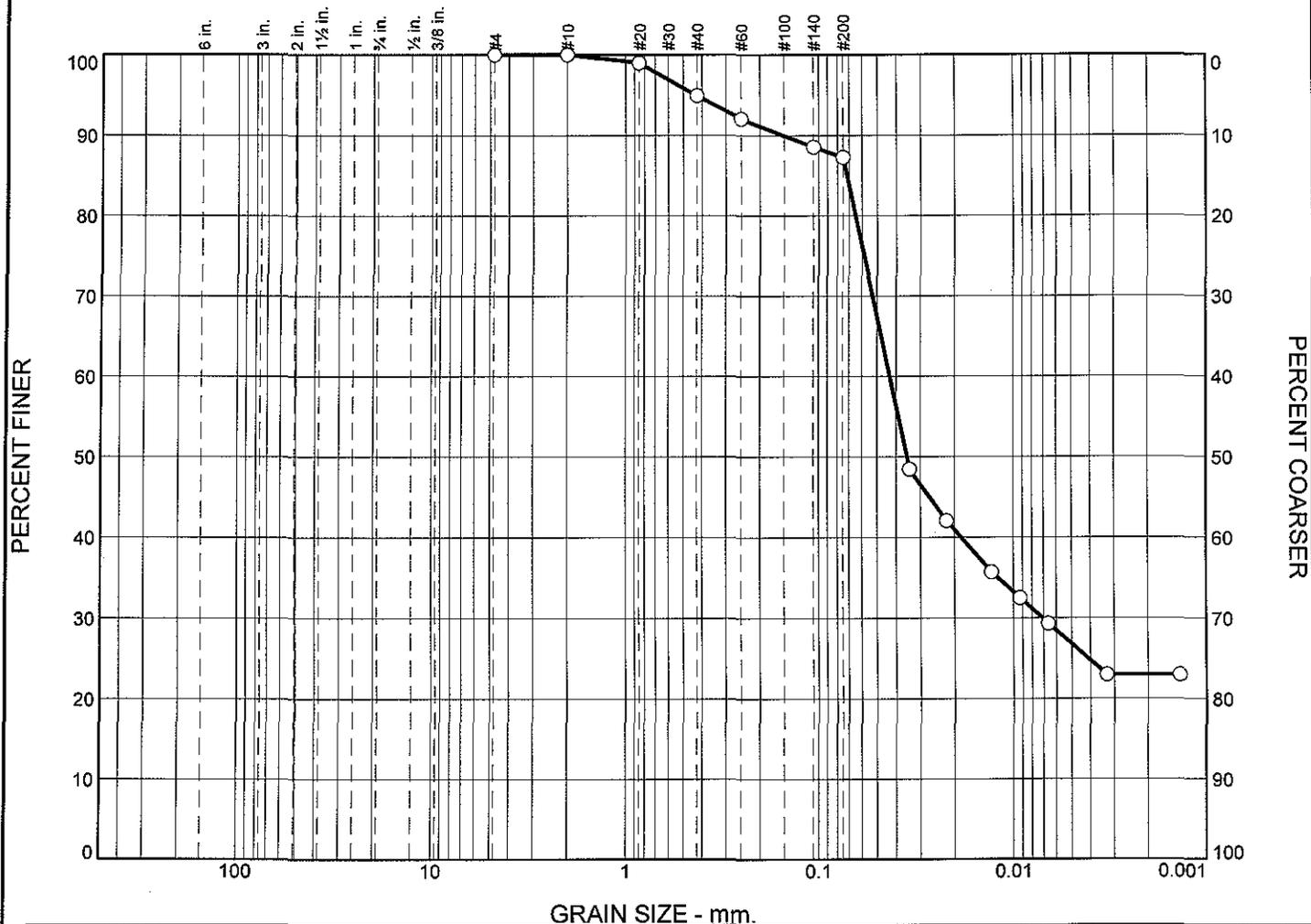
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.0     | 0.0      | 1.2     | 5.0  | 5.8  | 4.6  | 11.7    | 28.3  | 27.3 | 5.2  | 8.6  | 2.9     | 44.0 | 27.7  |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0060 | 0.0388 | 0.0483 | 0.0749 | 0.1588 | 0.3186 | 0.5711 |

| Fineness Modulus |
|------------------|
| 0.31             |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0             | 0.0             | 0.8             | 3.3             | 3.8             | 2.9             | 10.9           | 31.3           | 9.1  | 7.0  | 6.4     | 24.5   |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0716          | 0.0431          | 0.0352          | 0.0071          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912906     **Client:** Woods Hole Group  
**Project:** New Bedford Harbor Long Term Monitoring  
  
 ○ **Source of Sample:** 500513     **Sample Number:** L0912906-19  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500513  
 Sample Number: L0912906-19  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 12.12  
 Tare Wt. = 4.05  
 Minus #200 from wash = 81.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 44.04                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 405.96                  | 405.52               | 99.0          | 1.0              |
|                             |              | #40                | 361.08                  | 359.28               | 94.9          | 5.1              |
|                             |              | #60                | 367.52                  | 366.26               | 92.1          | 7.9              |
|                             |              | #140               | 344.48                  | 342.93               | 88.5          | 11.5             |
|                             |              | #200               | 345.87                  | 345.32               | 87.3          | 12.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 87.3  
 Weight of hydrometer sample = 44.04  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 48.4          | 51.6             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 42.1          | 57.9             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 35.7          | 64.3             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 32.5          | 67.5             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 29.3          | 70.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 23.0          | 77.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 23.0          | 77.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.8     | 3.3  | 3.8  | 2.9  | 10.9    | 21.7  | 31.3 | 9.1  | 7.0  | 6.4     | 53.8  | 24.5 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0071 | 0.0352 | 0.0431 | 0.0647 | 0.0716 | 0.1516 | 0.4313 |

| Fineness Modulus |
|------------------|
| 0.21             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500526  
 Sample Number: L0912906-20  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 16.26  
 Tare Wt. = 3.99  
 Minus #200 from wash = 70.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 41.84                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.16                  | 482.16               | 100.0         | 0.0              |
|                             |              | #20                | 411.94                  | 411.21               | 98.3          | 1.7              |
|                             |              | #40                | 380.71                  | 377.92               | 91.6          | 8.4              |
|                             |              | #60                | 371.69                  | 370.01               | 87.6          | 12.4             |
|                             |              | #140               | 349.37                  | 347.33               | 82.7          | 17.3             |
|                             |              | #200               | 347.47                  | 346.58               | 80.6          | 19.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 80.6  
 Weight of hydrometer sample = 41.84  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 40.9          | 59.1             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 37.8          | 62.2             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 31.6          | 68.4             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 28.5          | 71.5             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 25.4          | 74.6             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 25.4          | 74.6             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 25.4          | 74.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.0     | 0.0      | 1.4     | 5.4  | 5.6  | 4.0  | 12.5    | 28.9  | 31.0 | 6.4  | 6.8  | 1.5     | 45.7 | 25.4  |

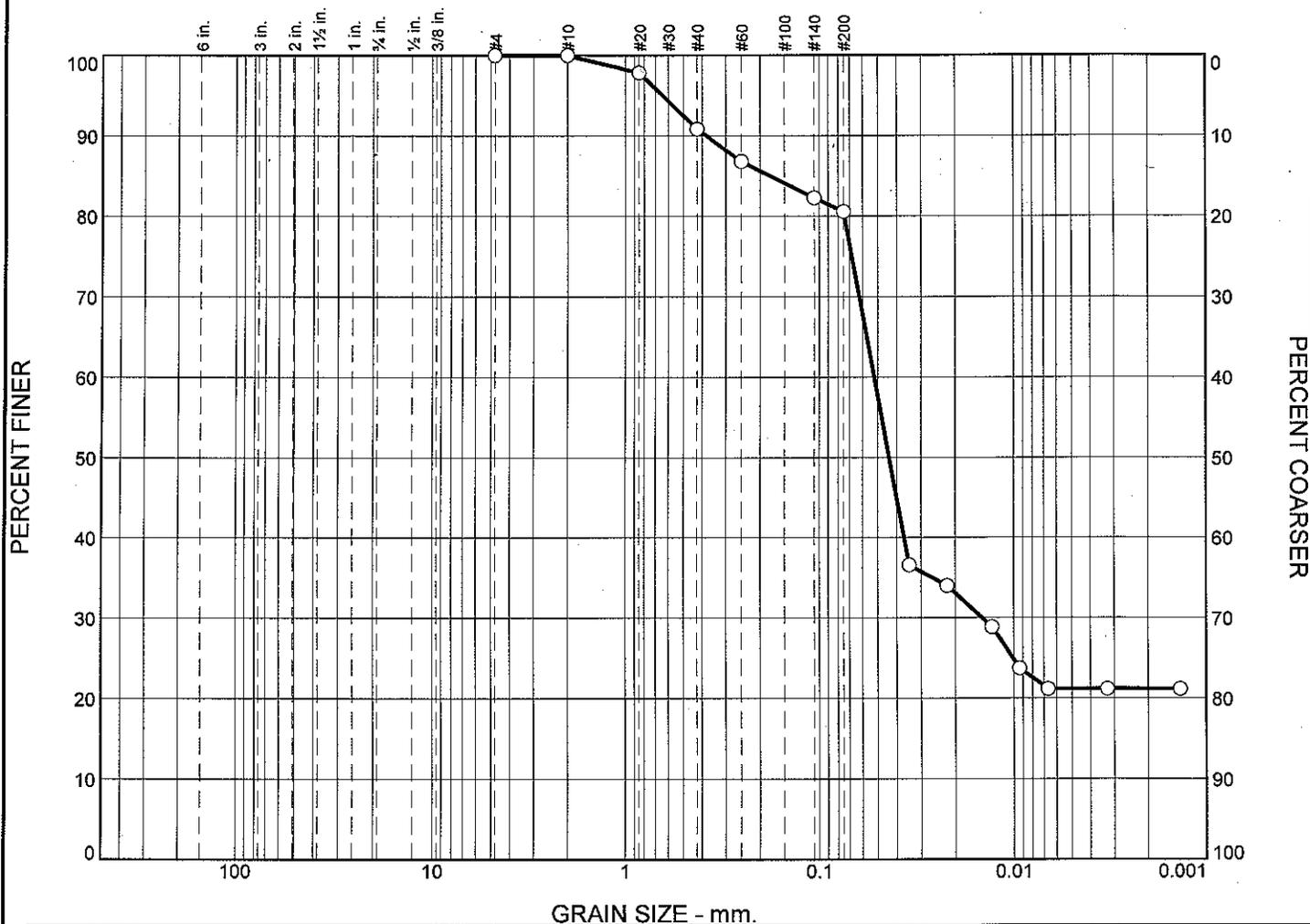
| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0110 | 0.0415 | 0.0504 | 0.0742 | 0.1590 | 0.3446 | 0.6060 |

Fineness  
Modulus

0.33

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |            |           |           |            |         |        |      |      |         |        |      |      |         |        |
|------------------|------------|-----------|-----------|------------|---------|--------|------|------|---------|--------|------|------|---------|--------|
|                  | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |         | % Silt |      |      |         | % Clay |
|                  |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○                | 0.0        | 0.0       | 0.0       | 0.0        | 1.8     | 5.7    | 5.7  | 3.6  | 13.0    | 34.2   | 5.3  | 8.4  | 1.2     | 21.1   |
| X                | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu     |      |      |         |        |
| ○                |            |           | 0.1777    | 0.0521     | 0.0437  | 0.0146 |      |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912906     **Client:** Woods Hole Group  
**Project:** New Bedford Harbor Long Term Monitoring  
  
 ○ **Source of Sample:** 500526     **Sample Number:** WG382093-1

---

**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Harbor Long Term Monitoring  
 Project Number: L0912906  
 Location: 500526  
 Sample Number: WG382093-1  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 17.98  
 Tare Wt. = 4.10  
 Minus #200 from wash = 72.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.29                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 406.61                  | 405.52               | 97.8          | 2.2              |
|                             |              | #40                | 362.80                  | 359.28               | 90.8          | 9.2              |
|                             |              | #60                | 368.29                  | 366.26               | 86.8          | 13.2             |
|                             |              | #140               | 345.20                  | 342.93               | 82.3          | 17.7             |
|                             |              | #200               | 346.19                  | 345.32               | 80.6          | 19.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 80.6  
 Weight of hydrometer sample = 50.29  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 36.6          | 63.4             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 34.0          | 66.0             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 28.8          | 71.2             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 23.7          | 76.3             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 21.1          | 78.9             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 21.1          | 78.9             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 21.1          | 78.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 1.8     | 5.7  | 5.7  | 3.6  | 13.0    | 29.8  | 34.2 | 5.3  | 8.4  | 1.2     | 49.1  | 21.1 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0146          | 0.0437          | 0.0521          | 0.0743          | 0.1777          | 0.3809          | 0.6421          |

| Fineness Modulus |
|------------------|
| 0.35             |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. *NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. *NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. *NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A,3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D,9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

# CHAIN OF CUSTODY

PAGE 1 OF 14



## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: 20912906

## Report Information Data Deliverables Billing Information

FAX  EMAIL  Same as Client info PO #:  
 ADEx  Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program Criteria  
 fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|   |        |         |       |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |          |   |
|---|--------|---------|-------|----|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|---|
| 1 | 500111 | 9/24/09 | 11:19 | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
| 2 | 500112 | 9/24/09 | 11:19 | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
| 3 | 500113 | 9/24/09 | 11:19 | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
|   | 500125 | 9/24/09 | 11:21 | SE | HC | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem | 1 |
| 4 | 500126 | 9/24/09 | 11:23 | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   | 1 |
|   | 500127 | 9/24/09 | 11:21 | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch | 1 |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
|---------------------|---------------|---------------------|---------------|
| <i>Paul D. L...</i> | 9-24-09 19:34 | <i>Paul D. L...</i> | 9/24/09 19:34 |
| <i>Paul D. L...</i> | 9/25/09 9:15  | <i>Paul D. L...</i> | 9/25/09 9:15  |
| <i>Paul D. L...</i> | 9/25/09 10:35 | <i>Paul D. L...</i> | 9/25/09 10:35 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

02021014:46





# CHAIN OF CUSTODY

PAGE 3 OF 14

02021014:46

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912906

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 500311    | 9/24/09    | 12:43 | SE            | HC                 |
| 10                             | 500312    | 9/24/09    | 12:13 | SE            | HC                 |
| 11                             | 500313    | 9/24/09    | 12:13 | SE            | HC                 |
|                                | 500325    | 9/24/09    | 12:25 | SE            | HC                 |
| 12                             | 500326    | 9/24/09    | 12:25 | SE            | HC                 |
|                                | 500327    | 9/24/09    | 12:25 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                     |               |                     |               |
|---------------------|---------------|---------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
| <i>Paul Dillert</i> | 9/25/09 9:15  | <i>Paul Dillert</i> | 9/25/09 9:15  |
| <i>Paul Dillert</i> | 9/25/09 10:35 | <i>Paul Dillert</i> | 9/25/09 10:35 |

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# CHAIN OF CUSTODY

PAGE 4 OF 14

02021014:46

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912906

## Report Information Data Deliverables

FAX     EMAIL  
 ADEX     Add'l Deliverables

## Billing Information

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 13                             | 500411    | 9/24/09    | 14:28 | SE            | HC                 |
| 14                             | 500412    | 9/24/09    | 14:28 | SE            | HC                 |
| 15                             | 500413    | 9/24/09    | 14:28 | SE            | HC                 |
|                                | 500425    | 9/24/09    | 14:34 | SE            | HC                 |
| 16                             | 500426    | 9/24/09    | 14:34 | SE            | HC                 |
|                                | 500427    | 9/24/09    | 14:34 | SE            | HC                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

|                        |               |                 |               |
|------------------------|---------------|-----------------|---------------|
| Relinquished By:       | Date/Time     | Received By:    | Date/Time     |
| <i>Heidi...</i>        | 9/24/09       | <i>Kelly...</i> | 9/24/09 9:40  |
| <i>Kathleen McCann</i> | 9/25/09 9:15  | <i>Paul...</i>  | 9/25/09 9:15  |
| <i>Paul Wilbert</i>    | 9/25/09 10:35 | <i>...</i>      | 9/25/09 10:35 |





## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912907  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/02/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

---

320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912907-01                | 500611           | NEW BEDFORD, MA            | 09/24/09 13:26                  |
| L0912907-02                | 500612           | NEW BEDFORD, MA            | 09/24/09 13:26                  |
| L0912907-03                | 500613           | NEW BEDFORD, MA            | 09/24/09 13:26                  |
| L0912907-04                | 500626           | NEW BEDFORD, MA            | 09/24/09 13:28                  |
| L0912907-05                | 500711           | NEW BEDFORD, MA            | 09/27/09 11:40                  |
| L0912907-06                | 500712           | NEW BEDFORD, MA            | 09/27/09 11:43                  |
| L0912907-07                | 500713           | NEW BEDFORD, MA            | 09/27/09 11:48                  |
| L0912907-08                | 500726           | NEW BEDFORD, MA            | 09/27/09 12:55                  |
| L0912907-09                | 500811           | NEW BEDFORD, MA            | 09/27/09 10:03                  |
| L0912907-10                | 500812           | NEW BEDFORD, MA            | 09/27/09 10:07                  |
| L0912907-11                | 500813           | NEW BEDFORD, MA            | 09/27/09 10:10                  |
| L0912907-12                | 500826           | NEW BEDFORD, MA            | 09/27/09 10:20                  |
| L0912907-13                | 500911           | NEW BEDFORD, MA            | 09/27/09 10:51                  |
| L0912907-14                | 500912           | NEW BEDFORD, MA            | 09/27/09 10:35                  |
| L0912907-15                | 500913           | NEW BEDFORD, MA            | 09/27/09 11:00                  |
| L0912907-16                | 500926           | NEW BEDFORD, MA            | 09/27/09 11:05                  |
| L0912907-17                | 501011           | NEW BEDFORD, MA            | 09/27/09 09:05                  |
| L0912907-18                | 501012           | NEW BEDFORD, MA            | 09/27/09 09:08                  |
| L0912907-19                | 501013           | NEW BEDFORD, MA            | 09/27/09 09:13                  |
| L0912907-20                | 501026           | NEW BEDFORD, MA            | 09/27/09 09:28                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

---

### Report Submission

This report replaces the original report issued on October 22, 2009. The report was ammended to include revised Grain Size data.

### Grain Size

The WG382094-1 Laboratory Duplicate RPD is outside the acceptance criteria for gravel (60%), coarse sand (25%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

**Case Narrative (continued)**

laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/02/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-01  
**Client ID:** 500611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 13:26  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.600  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 59.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-02  
**Client ID:** 500612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 13:26  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 55.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 25.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-03  
**Client ID:** 500613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 13:26  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 62.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-04  
**Client ID:** 500626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 13:28  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.100  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 51.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 29.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-05  
**Client ID:** 500711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:40  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 41.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 15.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-06  
**Client ID:** 500712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:43  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.70   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.40   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 25.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-07  
**Client ID:** 500713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:48  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.40   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-08  
**Client ID:** 500726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 12:55  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 18.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-09  
**Client ID:** 500811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:03  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.800  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 23.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-10  
**Client ID:** 500812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:07  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.600  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.70   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-11  
**Client ID:** 500813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:10  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.900  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.600  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 48.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-12  
**Client ID:** 500826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.900  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 48.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 27.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-13  
**Client ID:** 500911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:51  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.600  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.600  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 46.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 30.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-14  
**Client ID:** 500912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.8   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 20.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-15  
**Client ID:** 500913  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.600  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 47.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.9   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-16  
**Client ID:** 500926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:05  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.10   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.900  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.7   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-17  
**Client ID:** 501011  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 09:05  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.90   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.00   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.40   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.1   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-18  
**Client ID:** 501012  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 09:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.40   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.80   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.50   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.30   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 48.5   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.4   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-19  
**Client ID:** 501013  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 09:13  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.60   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.6   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 35.3   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912907-20  
**Client ID:** 501026  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 09:28  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.300  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.900  |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.20   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 53.0   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 33.2   |           | %     | 0.100 | 1               | -             | 09/29/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912907

**Report Date:** 02/02/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG382094-1 QC Sample: L0912907-08 Client ID: 500726 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 2.8           | 1.50             | %     | 60  | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 3.2           | 3.00             | %     | 6   |      | 20         |
| Coarse Sand (0.50-1.00 mm)   | 3.9           | 5.00             | %     | 25  | Q    | 20         |
| Medium Sand (0.25-0.50 mm)   | 6.5           | 6.00             | %     | 8   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 5.0           | 4.80             | %     | 4   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 13.5          | 13.7             | %     | 1   |      | 20         |
| Silt - (1.95-62.5 um)  | 45.1          | 46.7             | %     | 3   |      | 20         |
| Clay - (<1.95 um)  | 18.8          | 18.3             | %     | 3   |      | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912907

Project Number: TO-0018

Report Date: 02/02/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

## Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| A      | Absent       |
| C      | Absent       |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912907-01A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-02A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-03A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-04A | Glass 250ml unpreserved | A      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-05A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-06A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-07A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-08A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912907

Report Date: 02/02/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912907-09A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-10A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-11A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-12A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-13A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-14A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-15A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-16A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-17A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-18A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912907

Report Date: 02/02/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp<br>deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|---------------|------|--------|--|
| L0912907-19A | Glass 250ml unpreserved | C      | N/A | 3.5           | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912907-20A | Glass 250ml unpreserved | C      | N/A | 3.5           | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912907  
**Report Date:** 02/02/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422



## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500611  
 Sample Number: L0912907-01  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 46.62                       | 0.00         | #4                 | 521.05                  | 520.86               | 99.6          | 0.4              |
|                             |              | #10                | 482.22                  | 482.06               | 99.2          | 0.8              |
|                             |              | #20                | 411.27                  | 411.02               | 98.7          | 1.3              |
|                             |              | #40                | 378.21                  | 377.89               | 98.0          | 2.0              |
|                             |              | #60                | 370.34                  | 369.81               | 96.9          | 3.1              |
|                             |              | #140               | 348.23                  | 347.15               | 94.6          | 5.4              |
|                             |              | #200               | 347.04                  | 346.66               | 93.8          | 6.2              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 93.8  
 Weight of hydrometer sample = 46.62  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 49.1          | 50.9             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 42.7          | 57.3             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 33.0          | 67.0             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 29.8          | 70.2             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 26.5          | 73.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 23.3          | 76.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 23.3          | 76.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.4     | 0.6  | 1.3  | 1.9  | 11.6    | 15.8  | 35.7 | 11.4 | 8.3  | 3.9     | 59.3  | 24.1 |

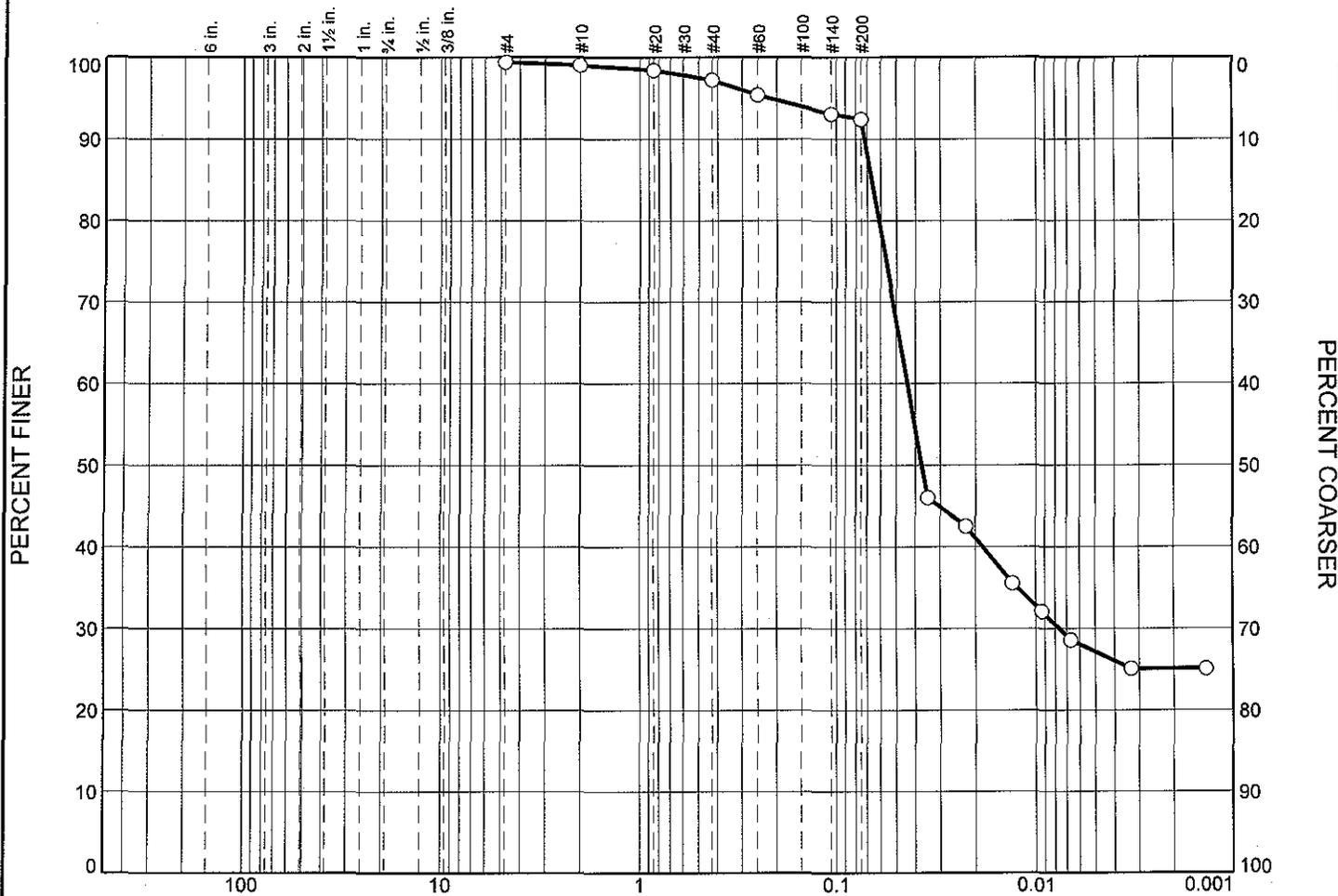
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0096          | 0.0346          | 0.0413          | 0.0588          | 0.0643          | 0.0702          | 0.1242          |

Fineness Modulus

0.11

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 0.3             | 0.5             | 1.0             | 2.1             | 1.9             | 12.1           | 36.3           | 7.2  | 7.7  | 4.3     | 25.9   |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0663          | 0.0439          | 0.0372          | 0.0076          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500612    <b>Sample Number:</b> L0912907-02</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/27/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500612  
 Sample Number: L0912907-02  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 42.65                       | 0.00         | #4                 | 521.99                  | 521.73               | 99.4          | 0.6              |
|                             |              | #10                | 484.89                  | 484.74               | 99.0          | 1.0              |
|                             |              | #20                | 405.63                  | 405.37               | 98.4          | 1.6              |
|                             |              | #40                | 362.18                  | 361.66               | 97.2          | 2.8              |
|                             |              | #60                | 366.91                  | 366.14               | 95.4          | 4.6              |
|                             |              | #140               | 343.79                  | 342.79               | 93.1          | 6.9              |
|                             |              | #200               | 345.45                  | 345.18               | 92.4          | 7.6              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 92.4  
 Weight of hydrometer sample = 42.65  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 46.0          | 54.0             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 42.5          | 57.5             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 35.5          | 64.5             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 32.1          | 67.9             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 28.6          | 71.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 25.1          | 74.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 25.1          | 74.9             |

## Fractional Components

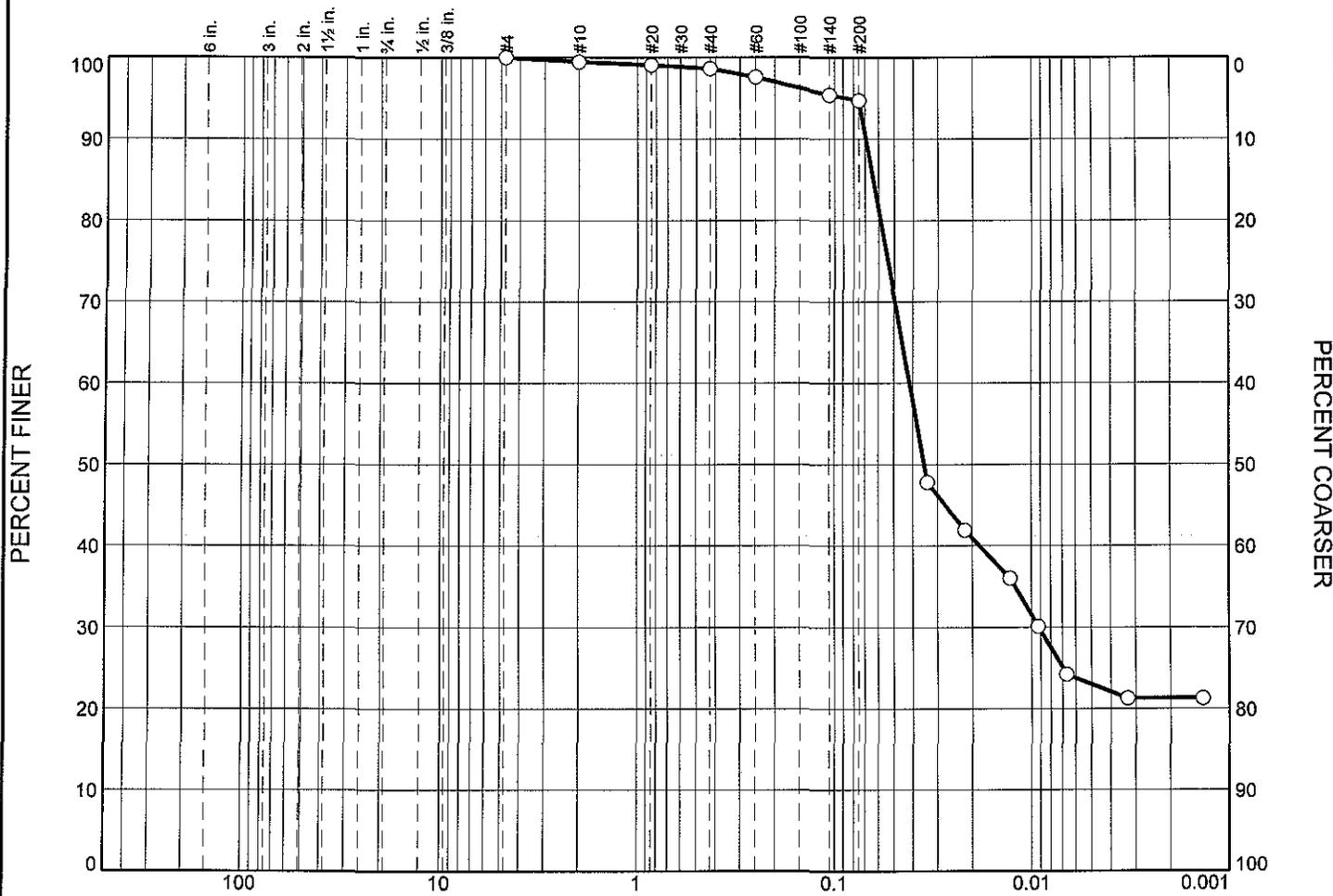
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.5     | 1.0  | 2.1  | 1.9  | 12.1    | 17.6  | 36.3 | 7.2  | 7.7  | 4.3     | 55.5  | 25.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0076          | 0.0372          | 0.0439          | 0.0611          | 0.0663          | 0.0720          | 0.2156          |

Fineness Modulus  
0.15

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.1             | 0.4             | 0.4             | 0.4             | 1.1             | 1.8             | 11.8           | 37.4           | 8.4  | 11.1 | 5.1     | 22.0   |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0636          | 0.0416          | 0.0351          | 0.0092          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500613    <b>Sample Number:</b> L0912907-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500613  
 Sample Number: L0912907-03  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.63                       | 0.00         | #4                 | 520.86                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.33                  | 482.06               | 99.5          | 0.5              |
|                             |              | #20                | 411.23                  | 411.02               | 99.1          | 0.9              |
|                             |              | #40                | 378.12                  | 377.89               | 98.6          | 1.4              |
|                             |              | #60                | 370.34                  | 369.81               | 97.6          | 2.4              |
|                             |              | #140               | 348.27                  | 347.15               | 95.4          | 4.6              |
|                             |              | #200               | 347.02                  | 346.66               | 94.7          | 5.3              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 94.7  
 Weight of hydrometer sample = 51.63  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0160         | 1.0162            | 0.0133 | 13.0 | 12.9       | 0.0338         | 47.8          | 52.2             |
| 5.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0218         | 41.9          | 58.1             |
| 15.00               | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0128         | 36.0          | 64.0             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 30.1          | 69.9             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 24.2          | 75.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 21.3          | 78.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 21.3          | 78.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.4      | 0.4     | 0.4  | 1.1  | 1.8  | 11.8    | 15.5  | 37.4 | 8.4  | 11.1 | 5.1     | 62.0  | 22.0 |

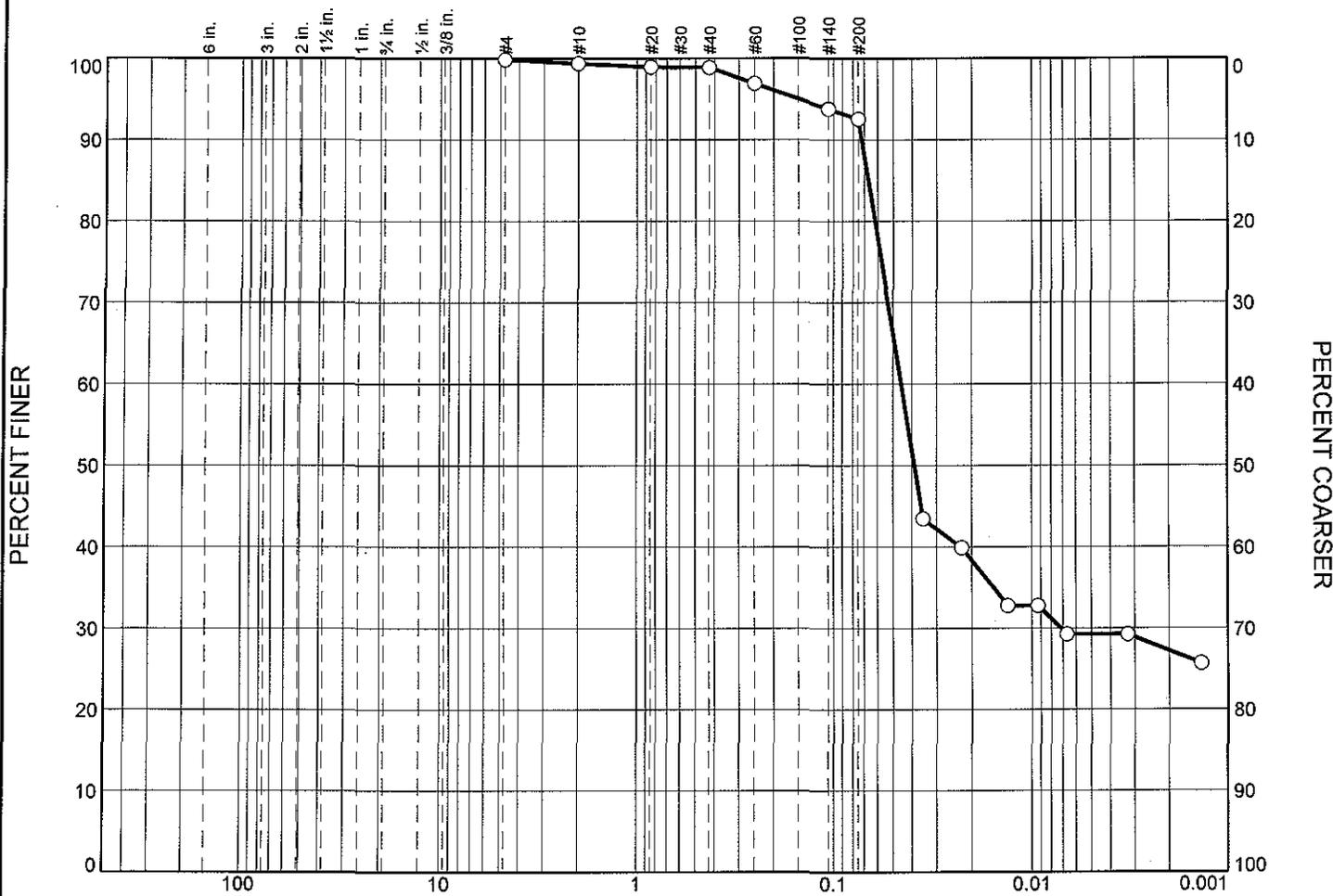
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0092          | 0.0351          | 0.0416          | 0.0584          | 0.0636          | 0.0692          | 0.0857          |

Fineness  
Modulus

0.08

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| <input type="radio"/>               |            |           |                 | 0.4             | 0.4             | 0.1             | 2.0             | 2.5             | 13.6           | 38.3           | 7.5  | 4.1  | 1.7    | 29.2    |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| <input type="radio"/>               |            |           | 0.0667          | 0.0454          | 0.0389          | 0.0072          |                 |                 |                |                |      |      |        |         |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 500626    <b>Sample Number:</b> L0912907-04</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912907

Location: 500626

Sample Number: L0912907-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 41.78                       | 0.00         | #4                 | 521.79                  | 521.73               | 99.9          | 0.1              |
|                             |              | #10                | 484.94                  | 484.74               | 99.4          | 0.6              |
|                             |              | #20                | 405.55                  | 405.37               | 98.9          | 1.1              |
|                             |              | #40                | 361.68                  | 361.66               | 98.9          | 1.1              |
|                             |              | #60                | 366.97                  | 366.14               | 96.9          | 3.1              |
|                             |              | #140               | 344.09                  | 342.79               | 93.8          | 6.2              |
|                             |              | #200               | 345.70                  | 345.18               | 92.6          | 7.4              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 92.6

Weight of hydrometer sample = 41.78

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 43.4          | 56.6             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 39.9          | 60.1             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 32.8          | 67.2             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 32.8          | 67.2             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 29.2          | 70.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 29.2          | 70.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 25.7          | 74.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 0.4     | 0.1  | 2.0  | 2.5  | 13.6    | 18.6  | 38.3 | 7.5  | 4.1  | 1.7     | 51.6  | 29.2 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0072 | 0.0389 | 0.0454 | 0.0618 | 0.0667 | 0.0721 | 0.1475 |

| Fineness Modulus |
|------------------|
| 0.10             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500711  
 Sample Number: L0912907-05  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 57.31                       | 0.00         | #4                 | 525.95                  | 520.86               | 91.1          | 8.9              |
|                             |              | #10                | 483.19                  | 482.06               | 89.1          | 10.9             |
|                             |              | #20                | 413.02                  | 411.02               | 85.7          | 14.3             |
|                             |              | #40                | 380.54                  | 377.89               | 81.0          | 19.0             |
|                             |              | #60                | 372.68                  | 369.81               | 76.0          | 24.0             |
|                             |              | #140               | 350.83                  | 347.15               | 69.6          | 30.4             |
|                             |              | #200               | 347.90                  | 346.66               | 67.4          | 32.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 67.4  
 Weight of hydrometer sample = 57.331  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 25.0          | 75.0             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 23.1          | 76.9             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 19.3          | 80.7             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 17.4          | 82.6             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 15.5          | 84.5             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 15.5          | 84.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 13.6          | 86.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.6      | 2.8     | 4.2  | 6.1  | 5.2  | 13.4    | 31.7  | 32.9 | 3.9  | 4.2  | 0.9     | 41.9  | 15.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0026          | 0.0144          | 0.0381          | 0.0547          | 0.0656          | 0.3809          | 0.7703          | 2.9080          |                 |

Fineness Modulus

0.99



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500712  
 Sample Number: L0912907-06  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 46.00                       | 0.00         | #4                 | 521.79                  | 521.73               | 99.9          | 0.1              |
|                             |              | #10                | 485.14                  | 484.74               | 99.0          | 1.0              |
|                             |              | #20                | 406.61                  | 405.37               | 96.3          | 3.7              |
|                             |              | #40                | 362.93                  | 361.66               | 93.5          | 6.5              |
|                             |              | #60                | 367.56                  | 366.14               | 90.5          | 9.5              |
|                             |              | #140               | 344.11                  | 342.79               | 87.6          | 12.4             |
|                             |              | #200               | 345.56                  | 345.18               | 86.8          | 13.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 86.8  
 Weight of hydrometer sample = 46  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 40.0          | 60.0             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 37.0          | 63.0             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 30.9          | 69.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 27.9          | 72.1             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 27.9          | 72.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 24.9          | 75.1             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 24.9          | 75.1             |

## Fractional Components

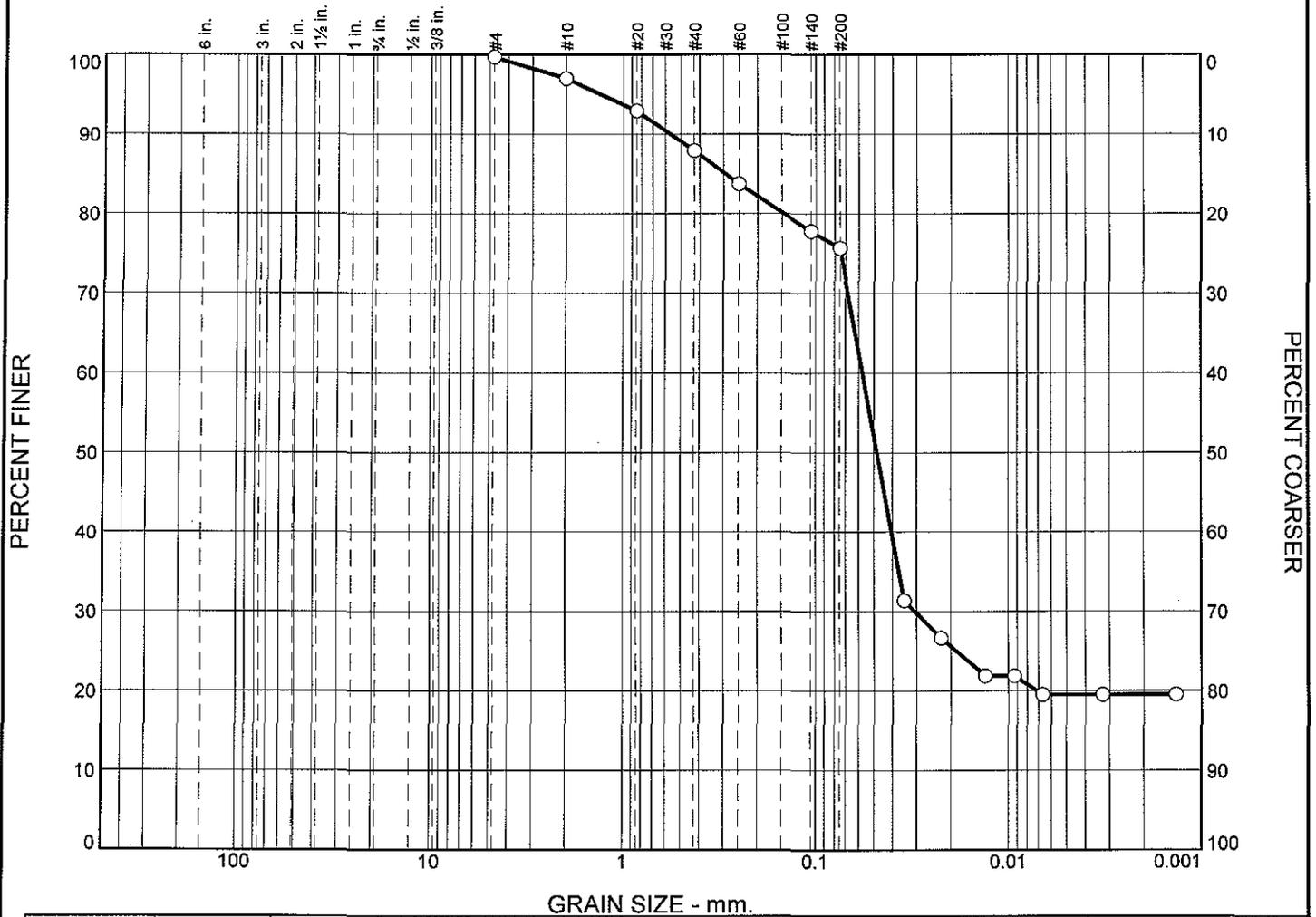
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.7      | 2.2     | 2.6  | 3.7  | 2.4  | 12.4    | 23.3  | 36.5 | 6.2  | 5.1  | 2.3     | 50.1  | 25.6 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0118          | 0.0410          | 0.0483          | 0.0671          | 0.0729          | 0.2181          | 0.6126          |

| Fineness Modulus |
|------------------|
| 0.28             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 2.2             | 3.3             | 4.6             | 5.4             | 4.8             | 13.7           | 35.1           | 6.7  | 2.8  | 1.1    | 19.5    |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 0.2939          | 0.0572          | 0.0481          | 0.0307          |                 |                 |                |                |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500713    <b>Sample Number:</b> L0912907-07</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500713  
 Sample Number: L0912907-07  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.23                       | 0.00         | #4                 | 521.01                  | 520.86               | 99.7          | 0.3              |
|                             |              | #10                | 483.45                  | 482.06               | 97.0          | 3.0              |
|                             |              | #20                | 413.10                  | 411.02               | 92.9          | 7.1              |
|                             |              | #40                | 380.46                  | 377.89               | 87.9          | 12.1             |
|                             |              | #60                | 371.96                  | 369.81               | 83.7          | 16.3             |
|                             |              | #140               | 350.19                  | 347.15               | 77.8          | 22.2             |
|                             |              | #200               | 347.74                  | 346.66               | 75.7          | 24.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 75.7  
 Weight of hydrometer sample = 51.23  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 31.3          | 68.7             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 26.6          | 73.4             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 21.9          | 78.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 21.9          | 78.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 19.5          | 80.5             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 19.5          | 80.5             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 19.5          | 80.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.2      | 3.3     | 4.6  | 5.4  | 4.8  | 13.7    | 31.8  | 35.1 | 6.7  | 2.8  | 1.1     | 45.7  | 19.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0072          | 0.0307          | 0.0481          | 0.0572          | 0.1460          | 0.2939          | 0.5667          | 1.3138          |

Fineness  
Modulus

0.53

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912907

Location: 500726

Sample Number: L0912907-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 53.29                       | 0.00         | #4                 | 522.02                  | 521.73               | 99.5          | 0.5              |
|                             |              | #10                | 486.60                  | 484.74               | 96.0          | 4.0              |
|                             |              | #20                | 407.44                  | 405.37               | 92.1          | 7.9              |
|                             |              | #40                | 363.89                  | 361.66               | 87.9          | 12.1             |
|                             |              | #60                | 369.09                  | 366.14               | 82.4          | 17.6             |
|                             |              | #140               | 346.08                  | 342.79               | 76.2          | 23.8             |
|                             |              | #200               | 346.47                  | 345.18               | 73.8          | 26.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 73.8

Weight of hydrometer sample = 53.29

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 31.6          | 68.4             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 27.1          | 72.9             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 24.9          | 75.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 20.5          | 79.5             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 20.5          | 79.5             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 18.3          | 81.7             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 18.3          | 81.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.8      | 3.2     | 3.9  | 6.5  | 5.0  | 13.5    | 32.1  | 33.4 | 4.8  | 5.2  | 1.7     | 45.1  | 18.8 |

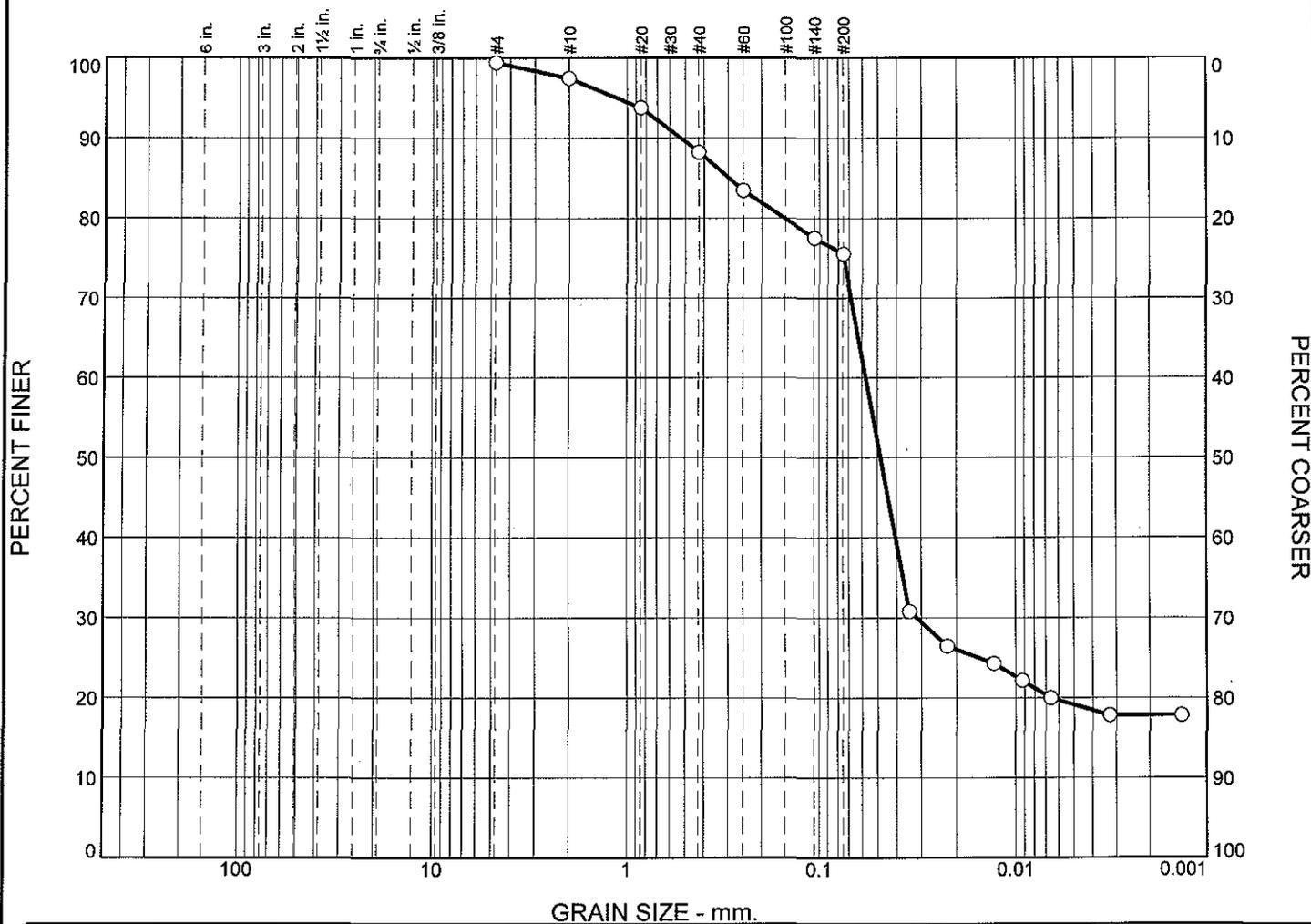
| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0057 | 0.0294 | 0.0484 | 0.0582 | 0.1801 | 0.3220 | 0.6022 | 1.6168 |

Fineness Modulus

0.57

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Sand          |                 |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|                                     |            |           |                 | % Granules      | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| <input type="radio"/>               |            |           |                 | 1.5             | 3.0             | 5.0             | 6.0             | 4.8             | 13.7           | 35.2           | 4.8  | 4.0  | 2.7    | 18.3    |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| <input type="radio"/>               |            |           | 0.2967          | 0.0572          | 0.0481          | 0.0318          |                 |                 |                |                |      |      |        |         |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |   |
|---|---|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 500726    <b>Sample Number:</b> WG382094-1</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p><br><br><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
|---|---|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500726  
 Sample Number: WG382094-1  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.97                       | 0.00         | #4                 | 521.18                  | 520.86               | 99.4          | 0.6              |
|                             |              | #10                | 483.16                  | 482.06               | 97.5          | 2.5              |
|                             |              | #20                | 413.08                  | 411.02               | 93.8          | 6.2              |
|                             |              | #40                | 380.99                  | 377.89               | 88.2          | 11.8             |
|                             |              | #60                | 372.49                  | 369.81               | 83.5          | 16.5             |
|                             |              | #140               | 350.47                  | 347.15               | 77.5          | 22.5             |
|                             |              | #200               | 347.78                  | 346.66               | 75.5          | 24.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 75.5  
 Weight of hydrometer sample = 55.97  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 30.8          | 69.2             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 26.5          | 73.5             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 24.3          | 75.7             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 22.1          | 77.9             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 20.0          | 80.0             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 17.8          | 82.2             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 17.8          | 82.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.5      | 3.0     | 5.0  | 6.0  | 4.8  | 13.7    | 32.5  | 35.2 | 4.8  | 4.0  | 2.7     | 46.7  | 18.3 |

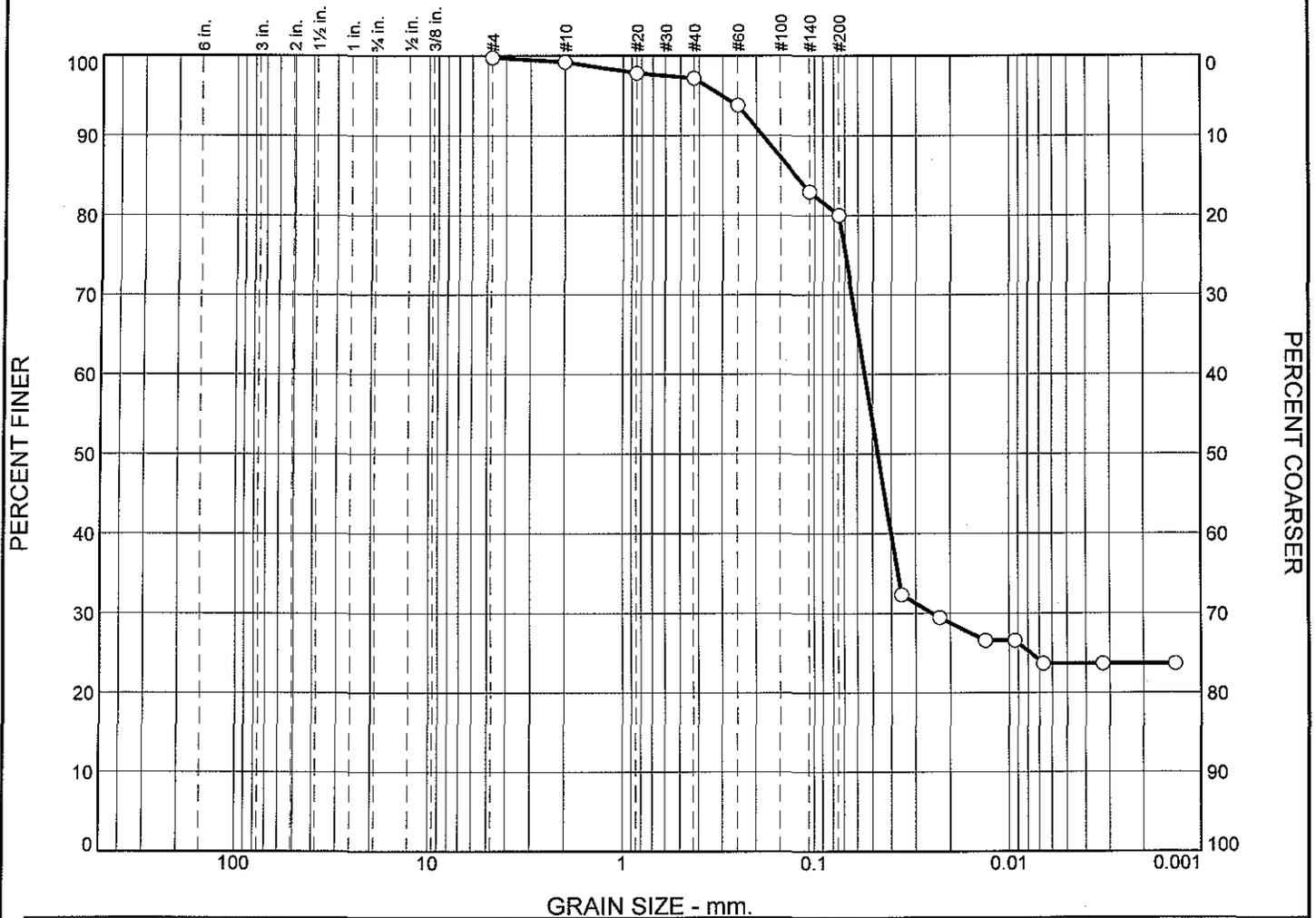
| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0066 | 0.0318 | 0.0481 | 0.0572 | 0.1517 | 0.2967 | 0.5295 | 1.1281 |

Fineness  
Modulus

0.52

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 0.4             | 1.1             | 0.8             | 3.5             | 8.8             | 16.6           | 36.9           | 4.0  | 2.5  | 1.3     | 23.7   |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.1248          | 0.0548          | 0.0468          | 0.0246          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500811    <b>Sample Number:</b> L0912907-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500811  
 Sample Number: L0912907-09  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 44.55                       | 0.00         | #4                 | 521.84                  | 521.73               | 99.8          | 0.2              |
|                             |              | #10                | 484.98                  | 484.74               | 99.2          | 0.8              |
|                             |              | #20                | 405.99                  | 405.37               | 97.8          | 2.2              |
|                             |              | #40                | 361.95                  | 361.66               | 97.2          | 2.8              |
|                             |              | #60                | 367.65                  | 366.14               | 93.8          | 6.2              |
|                             |              | #140               | 347.62                  | 342.79               | 82.9          | 17.1             |
|                             |              | #200               | 346.49                  | 345.18               | 80.0          | 20.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 80.0  
 Weight of hydrometer sample = 44.55  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 32.3          | 67.7             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 29.5          | 70.5             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 26.6          | 73.4             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 26.6          | 73.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 23.7          | 76.3             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 23.7          | 76.3             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 23.7          | 76.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.4      | 1.1     | 0.8  | 3.5  | 8.8  | 16.6    | 30.8  | 36.9 | 4.0  | 2.5  | 1.3     | 44.7 | 23.7  |

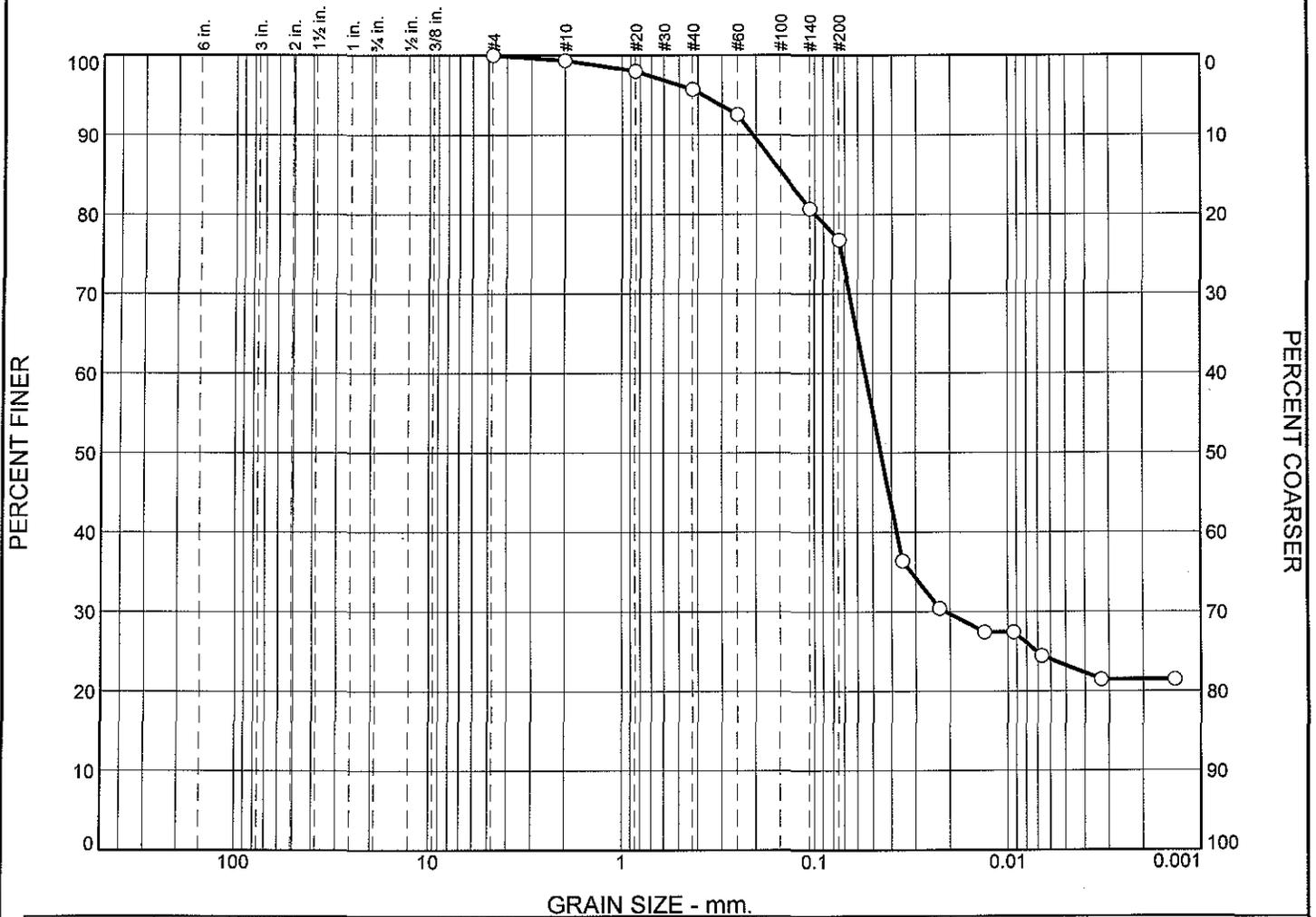
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0246          | 0.0468          | 0.0548          | 0.0750          | 0.1248          | 0.1853          | 0.3025          |

Fineness  
Modulus

0.23

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ | 0.0        | 0.0       | 0.1             | 0.6             | 1.0             | 2.0             | 3.7             | 9.6             | 15.9           | 32.4           | 6.4  | 2.5  | 3.6    | 22.2    |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 0.1447          | 0.0547          | 0.0454          | 0.0211          |                 |                 |                |                |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500812    <b>Sample Number:</b> L0912907-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500812  
 Sample Number: L0912907-10  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 41.43                       | 0.00         | #4                 | 520.86                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.33                  | 482.06               | 99.3          | 0.7              |
|                             |              | #20                | 411.57                  | 411.02               | 98.0          | 2.0              |
|                             |              | #40                | 378.84                  | 377.89               | 95.7          | 4.3              |
|                             |              | #60                | 371.12                  | 369.81               | 92.6          | 7.4              |
|                             |              | #140               | 352.07                  | 347.15               | 80.7          | 19.3             |
|                             |              | #200               | 348.28                  | 346.66               | 76.8          | 23.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 76.8  
 Weight of hydrometer sample = 41.43  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 36.3          | 63.7             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 30.4          | 69.6             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 27.4          | 72.6             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 27.4          | 72.6             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 24.4          | 75.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 21.5          | 78.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 21.5          | 78.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.6      | 1.0     | 2.0  | 3.7  | 9.6  | 15.9    | 32.2  | 32.4 | 6.4  | 2.5  | 3.6     | 44.9  | 22.2 |

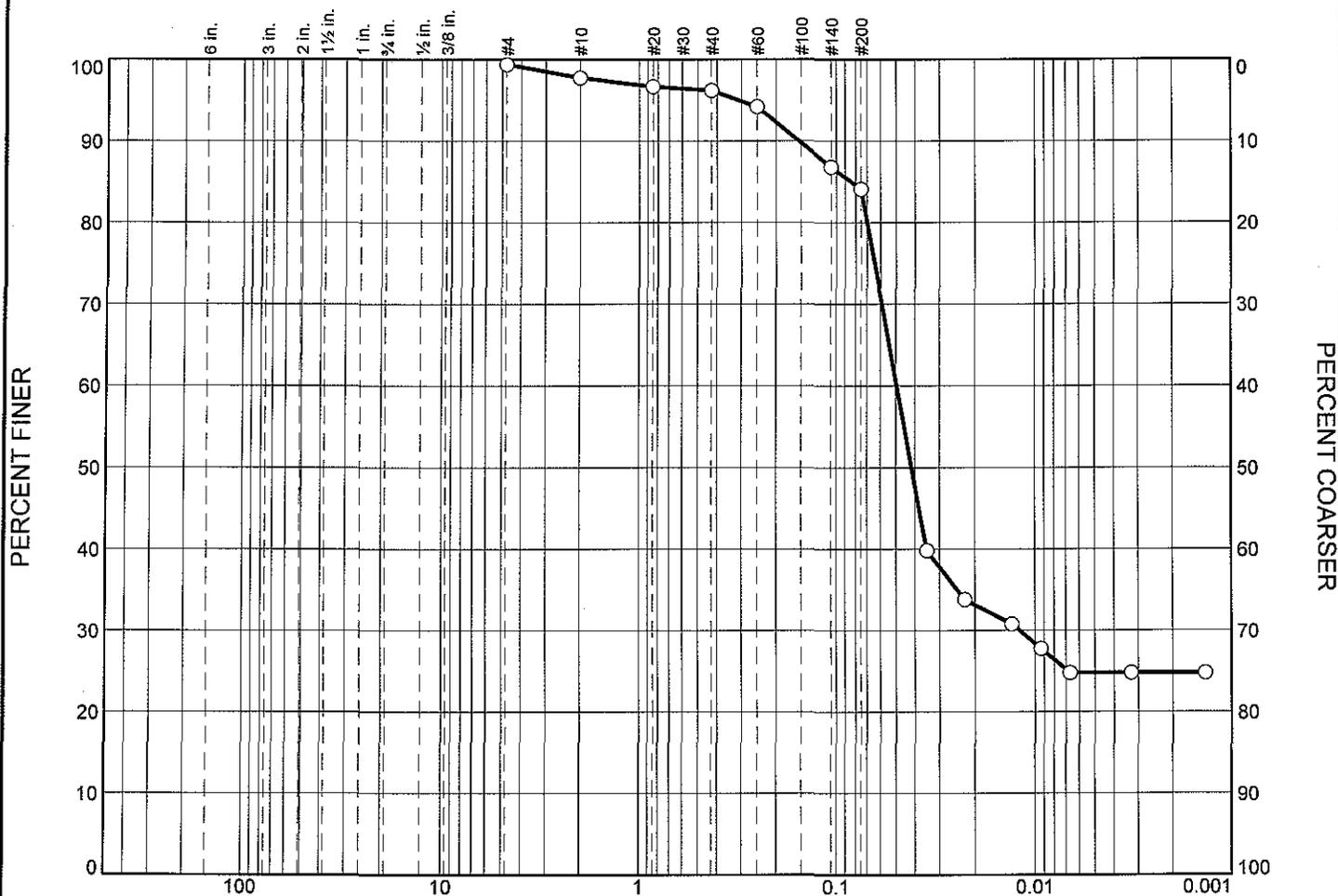
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0211          | 0.0454          | 0.0547          | 0.0997          | 0.1447          | 0.2077          | 0.3761          |

Fineness Modulus

0.26

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |        |      |      | Silt    |      |      |      | Clay |         |
|---|----------|---------|---------|----------|---------|--------|------|------|---------|------|------|------|------|---------|
|   |          |         |         |          | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs. | Med. | Fine |      | V. Fine |
| ○ |          |         |         | 1.3      | 0.9     | 0.6    | 2.1  | 6.0  | 14.6    | 35.4 | 6.4  | 5.6  | 1.5  | 24.7    |
| × | LL       | PL      | D85     | D60      | D50     | D30    | D15  | D10  | Cc      | Cu   |      |      |      |         |
| ○ |          |         | 0.0843  | 0.0494   | 0.0415  | 0.0120 |      |      |         |      |      |      |      |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912907 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 500813 <b>Sample Number:</b> L0912907-11 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500813  
 Sample Number: L0912907-11  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 44.82                       | 0.00         | #4                 | 522.00                  | 521.73               | 99.4          | 0.6              |
|                             |              | #10                | 485.47                  | 484.74               | 97.8          | 2.2              |
|                             |              | #20                | 405.87                  | 405.37               | 96.7          | 3.3              |
|                             |              | #40                | 361.87                  | 361.66               | 96.2          | 3.8              |
|                             |              | #60                | 367.03                  | 366.14               | 94.2          | 5.8              |
|                             |              | #140               | 346.11                  | 342.79               | 86.8          | 13.2             |
|                             |              | #200               | 346.39                  | 345.18               | 84.1          | 15.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 84.1  
 Weight of hydrometer sample = 44.82  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 39.8          | 60.2             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 33.8          | 66.2             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 30.8          | 69.2             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 27.8          | 72.2             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 24.7          | 75.3             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 24.7          | 75.3             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 24.7          | 75.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.3      | 0.9     | 0.6  | 2.1  | 6.0  | 14.6    | 24.2  | 35.4 | 6.4  | 5.6  | 1.5     | 48.9  | 24.7 |

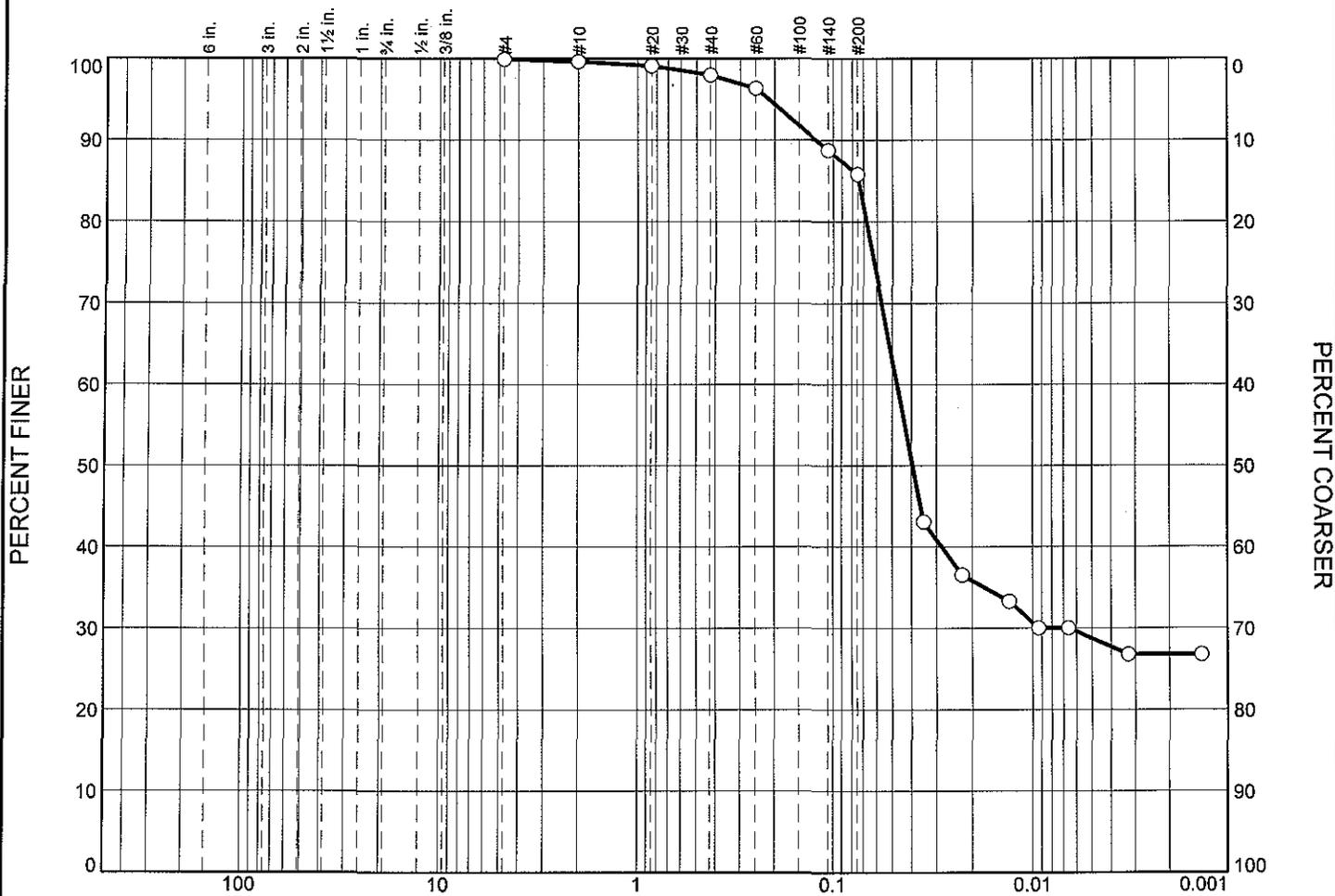
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0120          | 0.0415          | 0.0494          | 0.0699          | 0.0843          | 0.1537          | 0.3097          |

Fineness  
Modulus

0.24

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 0.3        | 0.4     | 0.9    | 2.0  | 6.1  | 14.6    | 34.3   | 7.0  | 4.3  | 2.4     | 27.6   |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.0739    | 0.0472     | 0.0394  | 0.0066 |      |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500826    <b>Sample Number:</b> L0912907-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500826  
 Sample Number: L0912907-12  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 42.30                       | 0.00         | #4                 | 520.88                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.19                  | 482.06               | 99.6          | 0.4              |
|                             |              | #20                | 411.25                  | 411.02               | 99.1          | 0.9              |
|                             |              | #40                | 378.36                  | 377.89               | 98.0          | 2.0              |
|                             |              | #60                | 370.51                  | 369.81               | 96.3          | 3.7              |
|                             |              | #140               | 350.37                  | 347.15               | 88.7          | 11.3             |
|                             |              | #200               | 347.90                  | 346.66               | 85.8          | 14.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 85.8  
 Weight of hydrometer sample = 42.30  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 43.0          | 57.0             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 36.5          | 63.5             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 33.3          | 66.7             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 30.0          | 70.0             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 30.0          | 70.0             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 26.7          | 73.3             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 26.7          | 73.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.4     | 0.9  | 2.0  | 6.1  | 14.6    | 24.0  | 34.3 | 7.0  | 4.3  | 2.4     | 48.0  | 27.6 |

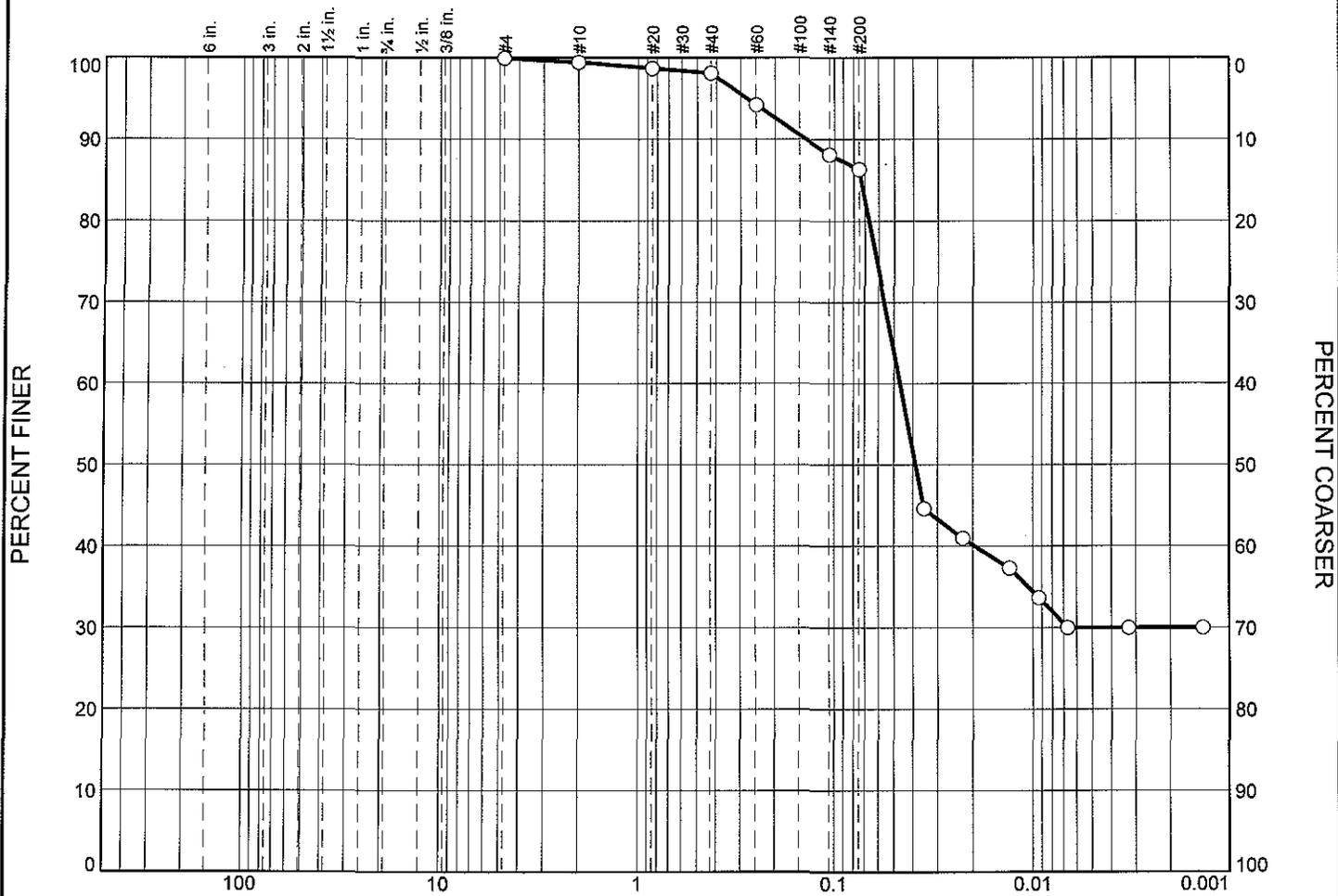
| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0066 | 0.0394 | 0.0472 | 0.0676 | 0.0739 | 0.1224 | 0.2151 |

Fineness  
Modulus

0.14

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 0.4             | 0.6             | 0.6             | 4.0             | 5.0             | 12.9           | 32.7           | 5.1  | 6.8  | 1.7     | 30.0   |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0732          | 0.0465          | 0.0388          | 0.0067          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 500911    <b>Sample Number:</b> L0912907-13</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500911  
 Sample Number: L0912907-13  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 37.97                       | 0.00         | #4                 | 521.76                  | 521.73               | 99.9          | 0.1              |
|                             |              | #10                | 484.92                  | 484.74               | 99.4          | 0.6              |
|                             |              | #20                | 405.66                  | 405.37               | 98.7          | 1.3              |
|                             |              | #40                | 361.89                  | 361.66               | 98.1          | 1.9              |
|                             |              | #60                | 367.61                  | 366.14               | 94.2          | 5.8              |
|                             |              | #140               | 345.12                  | 342.79               | 88.1          | 11.9             |
|                             |              | #200               | 345.85                  | 345.18               | 86.3          | 13.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 86.3  
 Weight of hydrometer sample = 37.97  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 44.6          | 55.4             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 40.9          | 59.1             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0131         | 37.3          | 62.7             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 33.6          | 66.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 30.0          | 70.0             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 30.0          | 70.0             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 30.0          | 70.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 0.6     | 0.6  | 4.0  | 5.0  | 12.9    | 23.1  | 32.7 | 5.1  | 6.8  | 1.7     | 46.3  | 30.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0067          | 0.0388          | 0.0465          | 0.0669          | 0.0732          | 0.1388          | 0.2787          |

Fineness  
Modulus

0.17

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500912  
 Sample Number: L0912907-14  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 54.40                       | 0.00         | #4                 | 520.84                  | 520.84               | 100.0         | 0.0              |
|                             |              | #10                | 482.54                  | 482.06               | 99.1          | 0.9              |
|                             |              | #20                | 411.59                  | 411.02               | 98.1          | 1.9              |
|                             |              | #40                | 379.05                  | 377.89               | 95.9          | 4.1              |
|                             |              | #60                | 372.17                  | 369.81               | 91.6          | 8.4              |
|                             |              | #140               | 351.17                  | 347.15               | 84.2          | 15.8             |
|                             |              | #200               | 348.33                  | 346.66               | 81.1          | 18.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 81.1  
 Weight of hydrometer sample = 54.40  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 36.4          | 63.6             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 31.6          | 68.4             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 26.9          | 73.1             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 24.5          | 75.5             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 22.1          | 77.9             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 19.7          | 80.3             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 19.7          | 80.3             |

## Fractional Components

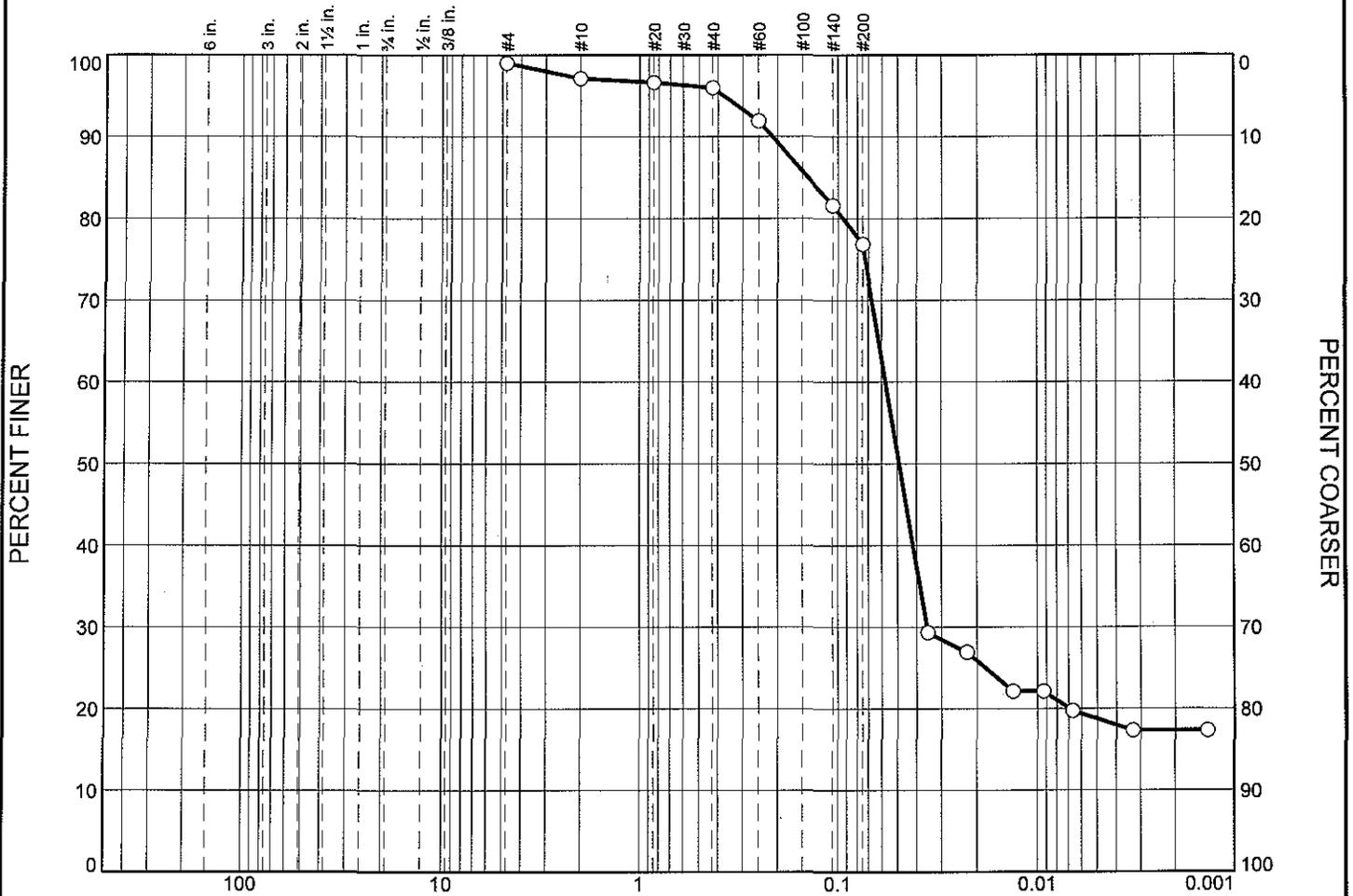
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.2     | 0.7      | 0.8     | 1.9  | 4.8  | 6.0  | 14.8    | 28.3  | 35.4 | 6.9  | 5.2  | 3.0     | 50.5  | 20.3 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0036          | 0.0183          | 0.0433          | 0.0517          | 0.0735          | 0.1162          | 0.2076          | 0.3790          |

|                  |
|------------------|
| Fineness Modulus |
| 0.25             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 1.6             | 0.4             | 0.6             | 4.2             | 8.3             | 18.2           | 36.8           | 5.0  | 2.8  | 2.9     | 17.9   |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.1409          | 0.0573          | 0.0489          | 0.0355          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912907 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 500913 <b>Sample Number:</b> L0912907-15 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  | <b>Figure</b>               |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912907

Location: 500913

Sample Number: L0912907-15

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.45                       | 0.00         | #4                 | 522.22                  | 521.73               | 99.0          | 1.0              |
|                             |              | #10                | 485.72                  | 484.74               | 97.1          | 2.9              |
|                             |              | #20                | 405.63                  | 405.37               | 96.6          | 3.4              |
|                             |              | #40                | 361.41                  | 361.06               | 96.0          | 4.0              |
|                             |              | #60                | 368.23                  | 366.14               | 91.9          | 8.1              |
|                             |              | #140               | 348.10                  | 342.79               | 81.6          | 18.4             |
|                             |              | #200               | 347.62                  | 345.18               | 76.8          | 23.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 76.8

Weight of hydrometer sample = 51.45

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 29.3          | 70.7             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 26.9          | 73.1             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 22.1          | 77.9             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 22.1          | 77.9             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 19.7          | 80.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 17.3          | 82.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 17.3          | 82.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.6      | 0.4     | 0.6  | 4.2  | 8.3  | 18.2    | 31.7  | 36.8 | 5.0  | 2.8  | 2.9     | 47.5  | 17.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0069          | 0.0355          | 0.0489          | 0.0573          | 0.0945          | 0.1409          | 0.2136          | 0.3750          |

Fineness Modulus

0.31

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 500926  
 Sample Number: L0912907-16  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 58.62                       | 0.00         | #4                 | 520.86                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.86                  | 482.06               | 98.6          | 1.4              |
|                             |              | #20                | 411.73                  | 411.02               | 97.4          | 2.6              |
|                             |              | #40                | 379.35                  | 377.89               | 94.9          | 5.1              |
|                             |              | #60                | 372.95                  | 369.81               | 89.6          | 10.4             |
|                             |              | #140               | 353.83                  | 347.15               | 78.2          | 21.8             |
|                             |              | #200               | 349.61                  | 346.66               | 73.1          | 26.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 73.1  
 Weight of hydrometer sample = 58.62  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 28.5          | 71.5             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 24.5          | 75.5             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 22.5          | 77.5             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 20.5          | 79.5             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 18.5          | 81.5             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 16.5          | 83.5             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 16.5          | 83.5             |

## Fractional Components

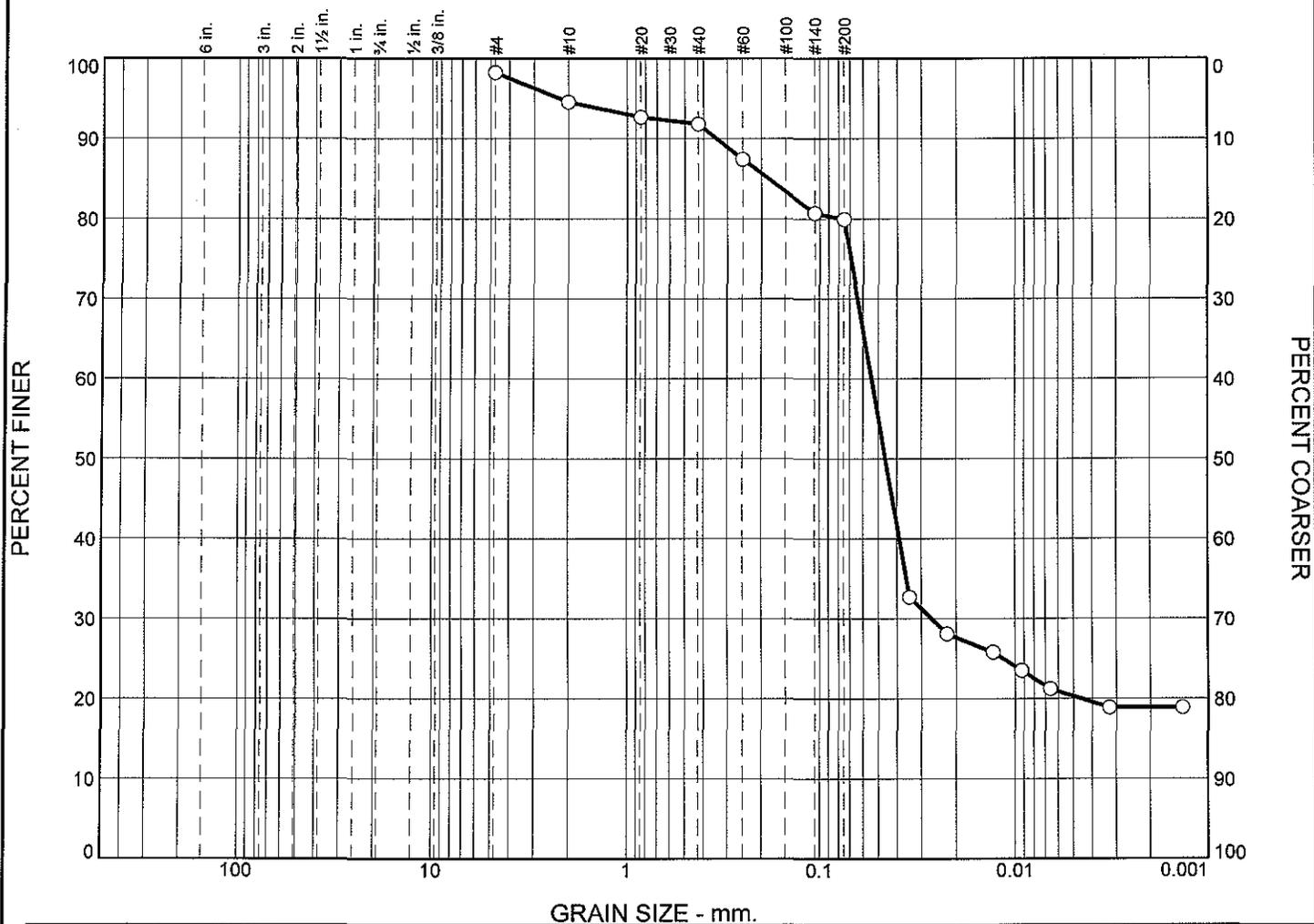
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.3     | 1.1      | 0.9     | 2.2  | 5.9  | 9.2  | 17.7    | 35.9  | 35.2 | 4.3  | 3.7  | 2.5     | 45.7  | 17.0 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0085 | 0.0354 | 0.0501 | 0.0596 | 0.1216 | 0.1771 | 0.2607 | 0.4329 |

| Fineness Modulus |
|------------------|
| 0.33             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 2.9             | 1.6             | 1.0             | 4.6             | 5.4             | 13.1           | 37.3           | 5.0  | 4.3  | 2.8     | 19.5   |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.1841          | 0.0540          | 0.0458          | 0.0267          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501011    <b>Sample Number:</b> L0912907-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 501011  
 Sample Number: L0912907-17  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.83                       | 0.00         | #4                 | 522.70                  | 521.73               | 98.3          | 1.7              |
|                             |              | #10                | 486.80                  | 484.74               | 94.6          | 5.4              |
|                             |              | #20                | 406.43                  | 405.37               | 92.7          | 7.3              |
|                             |              | #40                | 362.15                  | 361.66               | 91.8          | 8.2              |
|                             |              | #60                | 368.60                  | 366.14               | 87.4          | 12.6             |
|                             |              | #140               | 346.53                  | 342.79               | 80.7          | 19.3             |
|                             |              | #200               | 345.61                  | 345.18               | 79.9          | 20.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 79.9  
 Weight of hydrometer sample = 55.83  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 32.7          | 67.3             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 28.1          | 71.9             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 25.8          | 74.2             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 23.5          | 76.5             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 21.2          | 78.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 18.9          | 81.1             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 18.9          | 81.1             |

## Fractional Components

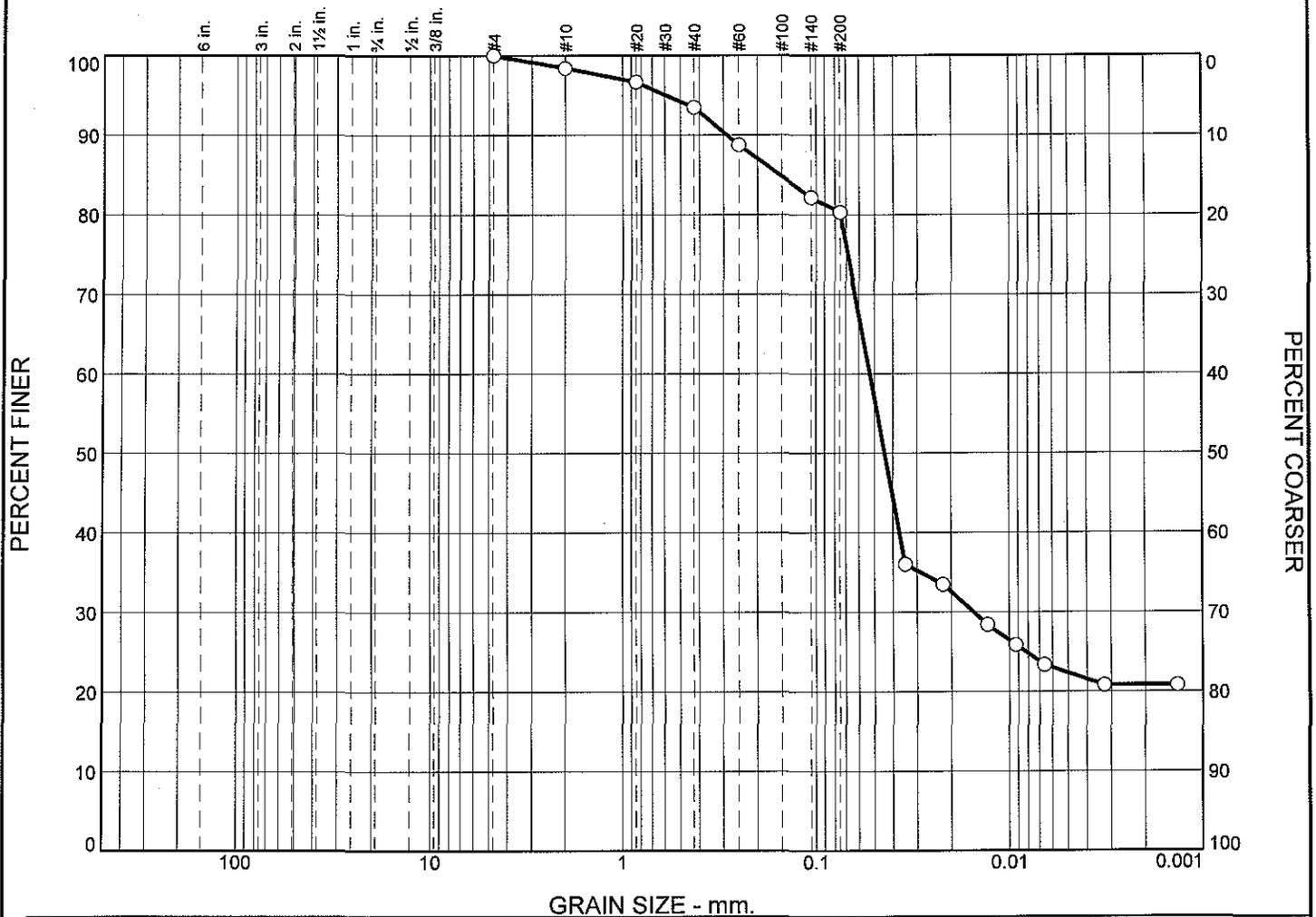
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.9      | 1.6     | 1.0  | 4.6  | 5.4  | 13.1    | 25.7  | 37.3 | 5.0  | 4.3  | 2.8     | 49.4  | 19.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0046          | 0.0267          | 0.0458          | 0.0540          | 0.0777          | 0.1841          | 0.3423          | 2.2107          |

| Fineness Modulus |
|------------------|
| 0.49             |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |           |           |            |         |      |      |      |         |        |      |      |         |        |
|------------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
| % Boulders       | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|                  |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| 0.0              | 0.0       | 0.3       | 1.3        | 1.4     | 2.8  | 5.5  | 5.3  | 13.5    | 34.5   | 5.2  | 5.6  | 3.2     | 21.4   |

| LL | PL | D85    | D60    | D50    | D30    | D15 | D10 | Cc | Cu |
|----|----|--------|--------|--------|--------|-----|-----|----|----|
|    |    | 0.1538 | 0.0525 | 0.0441 | 0.0153 |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
|                      |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912907 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 501012 <b>Sample Number:</b> L0912907-18 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912907

Location: 501012

Sample Number: L0912907-18

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.92                       | 0.00         | #4                 | 520.86                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.86                  | 482.06               | 98.4          | 1.6              |
|                             |              | #20                | 411.92                  | 411.02               | 96.7          | 3.3              |
|                             |              | #40                | 379.52                  | 377.89               | 93.5          | 6.5              |
|                             |              | #60                | 372.22                  | 369.81               | 88.7          | 11.3             |
|                             |              | #140               | 350.50                  | 347.15               | 82.1          | 17.9             |
|                             |              | #200               | 347.61                  | 346.66               | 80.3          | 19.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 80.3

Weight of hydrometer sample = 50.92

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 36.0          | 64.0             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 33.5          | 66.5             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 28.4          | 71.6             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 25.9          | 74.1             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 23.3          | 76.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 20.8          | 79.2             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 20.8          | 79.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.3     | 1.3      | 1.4     | 2.8  | 5.5  | 5.3  | 13.5    | 28.5  | 34.5 | 5.2  | 5.6  | 3.2     | 48.5  | 21.4 |

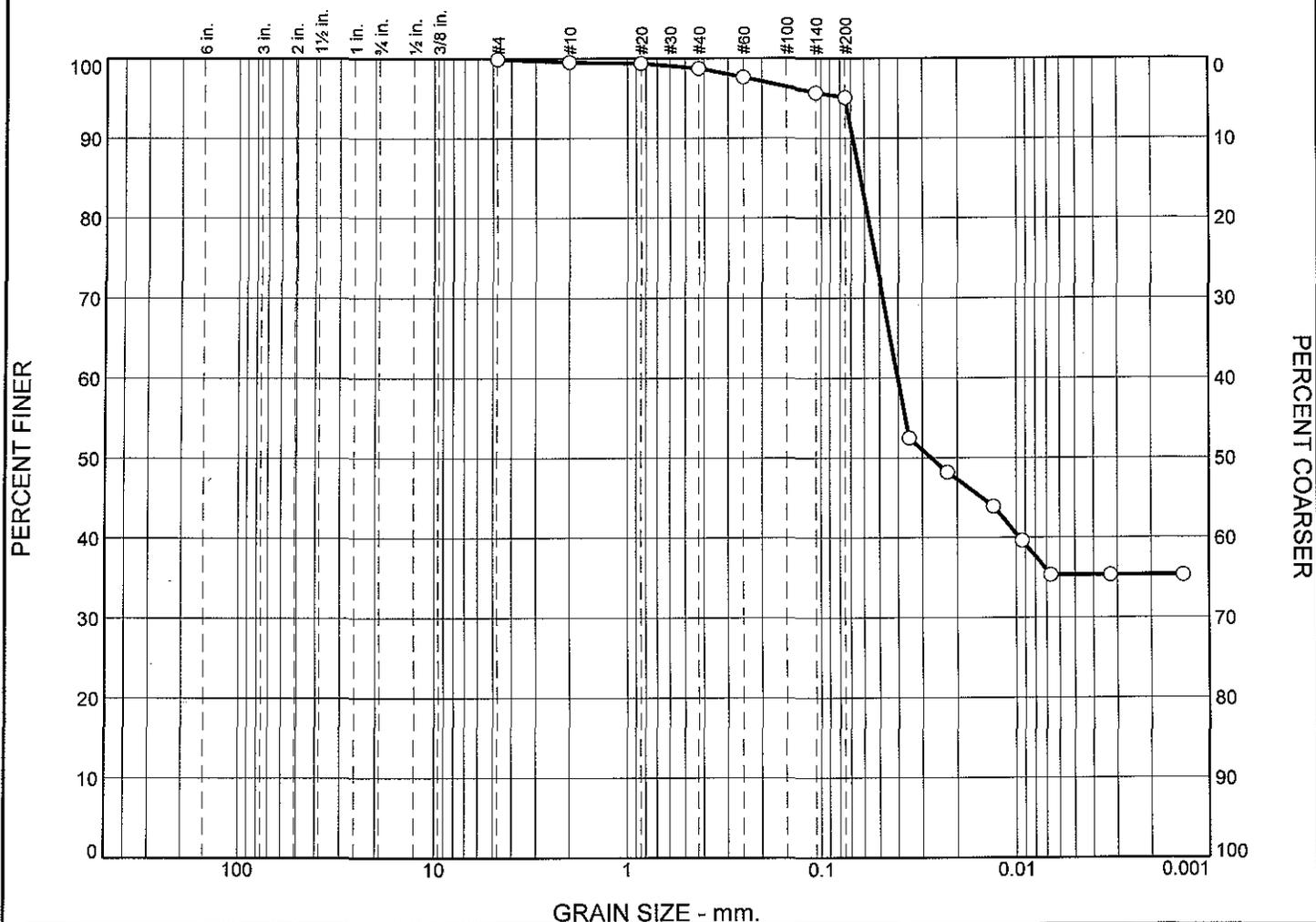
| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0153 | 0.0441 | 0.0525 | 0.0746 | 0.1538 | 0.2883 | 0.5932 |

Fineness Modulus

0.34

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| %                                   | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 | % Silt  |                 |      |                 | % Clay |                |                |
|-------------------------------------|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|--------|----------------|----------------|
|                                     |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |        | V. Fine        |                |
| <input type="radio"/>               |          |   |         |   |                 |   | 0.3             | 0.1     | 0.5             | 1.2  | 1.6             | 11.2    | 33.6            | 6.0  | 8.0             | 2.0    | 35.3           |                |
| <input checked="" type="checkbox"/> | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> | C <sub>u</sub> |
| <input type="radio"/>               |          |   |         |   | 0.0627          |   | 0.0401          |         | 0.0271          |      |                 |         |                 |      |                 |        |                |                |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 501013    <b>Sample Number:</b> L0912907-19</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912907  
 Location: 501013  
 Sample Number: L0912907-19  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 35.54                       | 0.00         | #4                 | 521.76                  | 521.73               | 99.9          | 0.1              |
|                             |              | #10                | 484.88                  | 484.74               | 99.5          | 0.5              |
|                             |              | #20                | 405.42                  | 405.37               | 99.4          | 0.6              |
|                             |              | #40                | 360.59                  | 360.36               | 98.7          | 1.3              |
|                             |              | #60                | 366.52                  | 366.14               | 97.7          | 2.3              |
|                             |              | #140               | 343.49                  | 342.79               | 95.7          | 4.3              |
|                             |              | #200               | 345.39                  | 345.18               | 95.1          | 4.9              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 95.1  
 Weight of hydrometer sample = 35.54  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 52.5          | 47.5             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 48.2          | 51.8             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0131         | 43.9          | 56.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 39.6          | 60.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 35.3          | 64.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 35.3          | 64.7             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 35.3          | 64.7             |

## Fractional Components

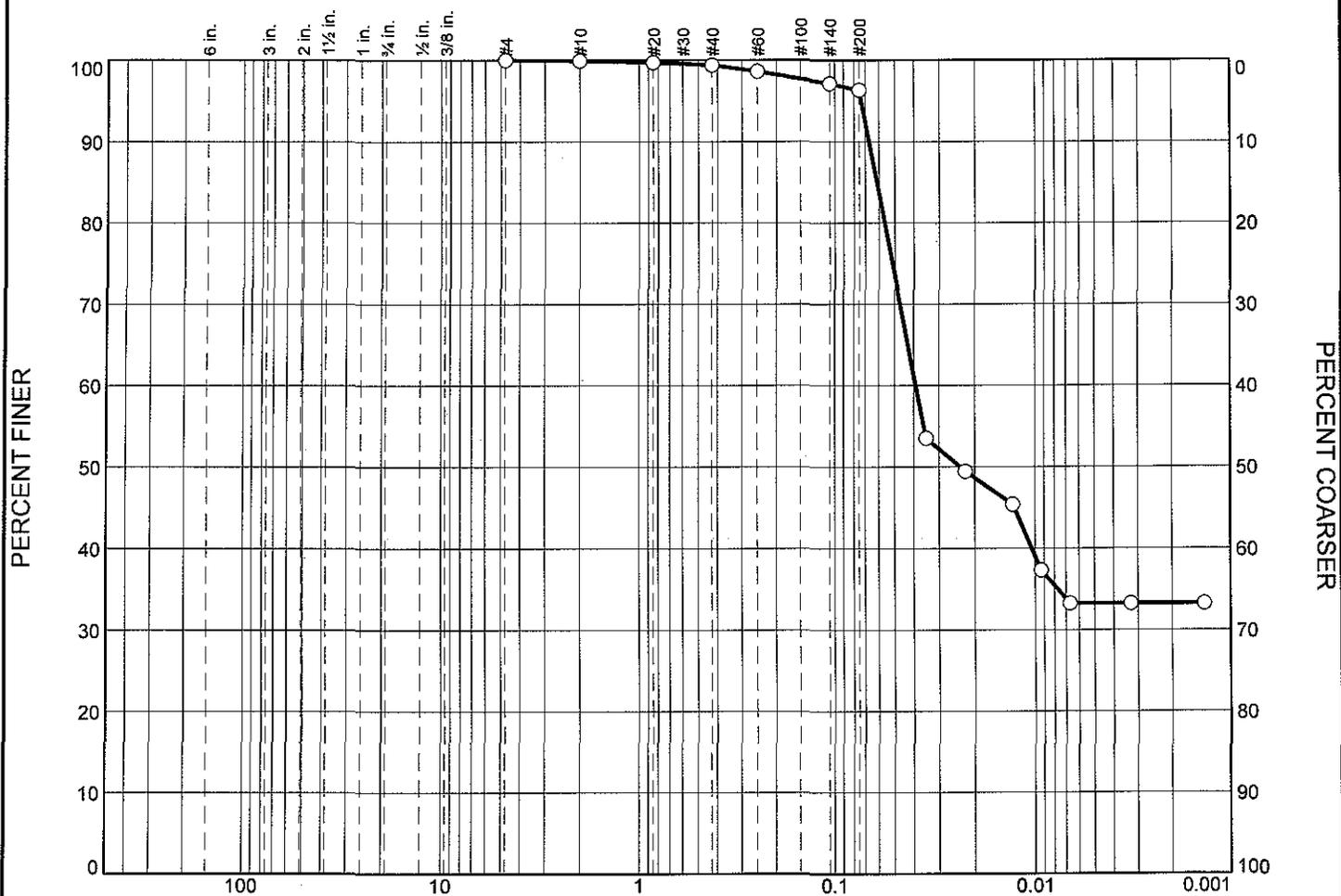
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.1     | 0.5  | 1.2  | 1.6  | 11.2    | 14.6  | 33.6 | 6.0  | 8.0  | 2.0     | 49.6  | 35.3 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0271 | 0.0401 | 0.0573 | 0.0627 | 0.0685 | 0.0749 |

| Fineness Modulus |
|------------------|
| 0.07             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.0             | 0.1             | 0.1             | 0.3             | 0.9             | 1.2             | 11.2           | 33.8           | 5.6  | 11.6 | 2.0     | 33.2   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.0612          | 0.0391          | 0.0236          |                 |                 |                 |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912907    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 501026    <b>Sample Number:</b> L0912907-20</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912907

Location: 501026

Sample Number: L0912907-20

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 38.22                       | 0.00         | #4                 | 520.86                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.08                  | 482.06               | 99.9          | 0.1              |
|                             |              | #20                | 411.10                  | 411.02               | 99.7          | 0.3              |
|                             |              | #40                | 378.02                  | 377.89               | 99.4          | 0.6              |
|                             |              | #60                | 370.11                  | 369.81               | 98.6          | 1.4              |
|                             |              | #140               | 347.72                  | 347.15               | 97.1          | 2.9              |
|                             |              | #200               | 346.96                  | 346.66               | 96.3          | 3.7              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 96.3

Weight of hydrometer sample = 38.22

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 53.5          | 46.5             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 49.4          | 50.6             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 45.4          | 54.6             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 37.3          | 62.7             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 33.2          | 66.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 33.2          | 66.8             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 33.2          | 66.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.1      | 0.1     | 0.3  | 0.9  | 1.2  | 11.2    | 13.7  | 33.8 | 5.6  | 11.6 | 2.0     | 53.0  | 33.2 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0236 | 0.0391 | 0.0560 | 0.0612 | 0.0669 | 0.0732 |

Fineness Modulus

0.04

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. NELAP Accredited.**

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A,3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D,9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.



# CHAIN OF CUSTODY

PAGE 6 OF 14

Date Rec'd in Lab:

ALPHA Job #: 20912907

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 1                              | 500611    | 9/24/09    | 13:26 | SE            | HC                 |
| 2                              | 500612    | 9/24/09    | 13:26 | SE            | HC                 |
| 3                              | 500613    | 9/24/09    | 13:22 | SE            | HC                 |
|                                | 500625    | 9/24/09    | 13:28 | SE            | HC                 |
| 4                              | 500626    | 9/24/09    | 13:28 | SE            | HC                 |
|                                | 500627    | 9/24/09    | 13:28 | SE            | HC                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                      |               |                      |               |
|----------------------|---------------|----------------------|---------------|
| Relinquished By:     | Date/Time     | Received By:         | Date/Time     |
| <i>Heidi...</i>      | 9-24-09 18:14 | <i>Fallon McLean</i> | 9/24/09 19:24 |
| <i>Fallon McLean</i> | 9/25/09 9:15  | <i>Paul Gilbert</i>  | 9/24/09 9:15  |
| <i>Paul Gilbert</i>  | 9/25/09       | <i>...</i>           | 9/25/09 10:35 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

02021016:33

Station 117

# CHAIN OF CUSTODY

PAGE 30 OF 41



Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: 20912907

Report Information Data Deliverables Billing Information  
 FAX  EMAIL  Same as Client info PO #:  
 ADEX  Add'l Deliverables

Regulatory Requirements/Report Limits  
 State/Fed Program Criteria  
 fed

## ANALYSIS

| total PCB congeners NOAA 18 | TOC | grain size | archive |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |   |
|-----------------------------|-----|------------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|---|
|                             |     |            |         |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |  |                 |   |
| 5                           |     |            |         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1 |
| 6                           |     |            |         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1 |
| 7                           |     |            |         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1 |
|                             |     |            |         | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed chem        | 1 |
|                             |     |            |         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed gs          | 1 |
|                             |     |            |         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>   | sed arch        | 1 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|   |        |         |       |    |    |
|---|--------|---------|-------|----|----|
| 5 | 500711 | 9-27-09 | 11:40 | SE | HC |
| 6 | 500712 | 9-27-09 | 11:43 | SE | HC |
| 7 | 500713 | 9-27-09 | 11:48 | SE | HC |
|   | 500725 | 9-27-09 | 12:55 | SE | DB |
| 8 | 500726 | 9-27-09 | 12:55 | SE | DB |
|   | 500727 | 9-27-09 | 12:55 | SE | DB |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
|--------------------|---------------|--------------------|---------------|
| <i>[Signature]</i> | 9/27/09 16:16 | <i>[Signature]</i> | 9-27-09       |
| <i>[Signature]</i> | 9-28-09 09:13 | <i>[Signature]</i> | 9/28/09 9:15  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |

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Station 1 LU

# CHAIN OF CUSTODY

PAGE 31 OF 41



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 10912907

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 500811    | 9-27-09    | 10:03 | SE            | HC                 |
| 10                             | 500812    | 9-27-09    | 10:07 | SE            | HC                 |
| 11                             | 500813    | 9-27-09    | 10:10 | SE            | HC                 |
|                                | 500825    | 9-27-09    | 10:20 | SE            | DB                 |
| 12                             | 500826    | 9-27-09    | 10:20 | SE            | DB                 |
|                                | 500827    | 9-27-09    | 10:20 | SE            | DB                 |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|   |   |   |  |
|---|---|---|--|
| Relinquished By:<br><i>[Signature]</i><br>P. Dillcutt | Date/Time:<br>9/27/09 16:10<br>9-28-09 09113<br>9/28/09 10:20 | Received By:<br><i>[Signature]</i><br>P. Dillcutt<br><i>[Signature]</i> | Date/Time:<br>9-27-09<br>9/28/09 9:25<br>9/28/09 10:20 |
|---|---|---|--|

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# CHAIN OF CUSTODY

PAGE 32 OF 41



Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

|   |   |
|---|---|
| Date Rec'd in Lab                                       | ALPHA Job #: 20912907                       |
| <b>Report Information</b>                               | <b>Data Deliverables</b>                    |
| <input type="checkbox"/> FAX                            | <input checked="" type="checkbox"/> EMAIL   |
| <input checked="" type="checkbox"/> ADEX                | <input type="checkbox"/> Add'l Deliverables |
| <b>Billing Information</b>                              |   |
| <input checked="" type="checkbox"/> Same as Client info | PO #:                                       |
| <b>Regulatory Requirements/Report Limits</b>            |   |
| State/Fed Program                                       | Criteria                                    |
| fed   |   |

| ANALYSIS                            |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|
| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 13                             | 500911    | 9-27-09    | 10:51 | SE            | AC                 |
| 14                             | 500912    | 9-27-09    | 10:35 | SE            | HC                 |
| 15                             | 500913    | 9-27-09    | 11:00 | SE            | HC                 |
|                                | 500925    | 9-27-09    | 11:09 | SE            | DB                 |
| 16                             | 500926    | 9-27-09    | 11:05 | SE            | DB                 |
|                                | 500927    | 9-27-09    | 11:05 | SE            | DB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>[Signature]</i> | 9/27/09 16:40 | <i>[Signature]</i> | 9/27/09       |
| <i>[Signature]</i> | 9-28-09 09:13 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms





## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912908  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/02/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912908-01                | 501111           | NEW BEDFORD, MA            | 09/23/09 12:43                  |
| L0912908-02                | 501112           | NEW BEDFORD, MA            | 09/23/09 12:43                  |
| L0912908-03                | 501113           | NEW BEDFORD, MA            | 09/23/09 12:43                  |
| L0912908-04                | 501126           | NEW BEDFORD, MA            | 09/23/09 12:50                  |
| L0912908-05                | 501211           | NEW BEDFORD, MA            | 09/23/09 11:15                  |
| L0912908-06                | 501212           | NEW BEDFORD, MA            | 09/23/09 11:15                  |
| L0912908-07                | 501213           | NEW BEDFORD, MA            | 09/23/09 11:15                  |
| L0912908-08                | 501226           | NEW BEDFORD, MA            | 09/23/09 11:18                  |
| L0912908-09                | 501311           | NEW BEDFORD, MA            | 09/23/09 10:05                  |
| L0912908-10                | 501312           | NEW BEDFORD, MA            | 09/23/09 10:05                  |
| L0912908-11                | 501313           | NEW BEDFORD, MA            | 09/23/09 10:05                  |
| L0912908-12                | 501326           | NEW BEDFORD, MA            | 09/23/09 10:11                  |
| L0912908-13                | 501411           | NEW BEDFORD, MA            | 09/22/09 09:00                  |
| L0912908-14                | 501412           | NEW BEDFORD, MA            | 09/22/09 09:00                  |
| L0912908-15                | 501413           | NEW BEDFORD, MA            | 09/22/09 09:00                  |
| L0912908-16                | 501426           | NEW BEDFORD, MA            | 09/22/09 09:25                  |
| L0912908-17                | 501511           | NEW BEDFORD, MA            | 09/23/09 08:46                  |
| L0912908-18                | 501512           | NEW BEDFORD, MA            | 09/23/09 08:46                  |
| L0912908-19                | 501513           | NEW BEDFORD, MA            | 09/23/09 08:46                  |
| L0912908-20                | 501526           | NEW BEDFORD, MA            | 09/23/09 08:50                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 22, 2009. The report was ammended to include revised Grain Size data.

### Grain Size

The WG382945-1 Laboratory Duplicate RPD is outside the acceptance criteria for gravel (32%), % coarse sand (24%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

**Case Narrative (continued)**

the laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/02/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-01  
**Client ID:** 501111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 12:43  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.20   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.50   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 6.70   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 40.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 44.6   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-02  
**Client ID:** 501112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 12:43  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.6   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.70   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.40   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 27.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-03  
**Client ID:** 501113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 12:43  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.100  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.600  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.4   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 55.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 31.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-04  
**Client ID:** 501126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 12:50  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.900  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.20   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.0   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 13.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-05  
**Client ID:** 501211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 11:15  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.50   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.70   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 20.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 24.4   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.4   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-06  
**Client ID:** 501212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 11:15  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 8.80   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 22.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.4   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 6.30   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-07  
**Client ID:** 501213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 11:15  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.40   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 24.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 28.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.0   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.50   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.300  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-08  
**Client ID:** 501226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 11:18  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.90   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.30   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 19.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 27.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.90   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-09  
**Client ID:** 501311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 10:05  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.80   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.20   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 42.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-10  
**Client ID:** 501312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 10:05  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.30   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.30   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.50   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 25.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-11  
**Client ID:** 501313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 10:05  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.40   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.50   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.50   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.7   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 41.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-12  
**Client ID:** 501326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 10:11  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.20   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.40   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.40   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 54.9   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.7   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-13  
**Client ID:** 501411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 09:00  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 9.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 15.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.9   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 13.9   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-14  
**Client ID:** 501412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 09:00  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 10.0   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 19.0   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 19.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 10.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.40   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-15  
**Client ID:** 501413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 09:00  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.50   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 10.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.6   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.6   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 10.6   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-16  
**Client ID:** 501426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 09:25  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.90   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 13.6   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 15.4   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.4   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-17  
**Client ID:** 501511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 08:46  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.40   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.90   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 13.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-18  
**Client ID:** 501512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 08:46  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.70   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.70   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.90   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 34.8   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 13.2   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-19  
**Client ID:** 501513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 08:46  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.10   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.00   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.1   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.5   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.7   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 34.6   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.3   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912908-20  
**Client ID:** 501526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 08:50  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.30   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.60   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.30   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.30   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.7   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.7   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.7   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.0   |           | %     | 0.100 | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912908

**Report Date:** 02/02/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG382945-1 QC Sample: L0912908-08 Client ID: 501226 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 6.9           | 5.00             | %     | 32  | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 4.0           | 4.30             | %     | 7   |      | 20         |
| Coarse Sand (0.50-1.00 mm)   | 6.3           | 8.00             | %     | 24  | Q    | 20         |
| Medium Sand (0.25-0.50 mm)   | 19.1          | 21.4             | %     | 11  |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 27.8          | 30.0             | %     | 8   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 14.5          | 16.3             | %     | 12  |      | 20         |
| Silt - (1.95-62.5 um)  | 9.1           | 8.10             | %     | 12  |      | 20         |
| Clay - (<1.95 um)  | 1.9           | 1.80             | %     | 5   |      | 20         |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### Sample Receipt and Container Information

Were project specific reporting limits specified? YES

#### Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| C      | Absent       |
| B      | Absent       |

#### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912908-01A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-02A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-03A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-04A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-05A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-06A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-07A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-08A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912908-09A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-10A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-11A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-12A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-13A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-14A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-15A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-16A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-17A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-18A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING**Project Number:** TO-0018**Lab Number:** L0912908**Report Date:** 02/02/10**Container Information**

| <b>Container ID</b> | <b>Container Type</b>   | <b>Cooler</b> | <b>pH</b> | <b>Temp<br/>deg C</b> | <b>Pres</b> | <b>Seal</b> | <b>Analysis</b>  |
|---------------------|-------------------------|---------------|-----------|-----------------------|-------------|-------------|--|
| L0912908-19A        | Glass 250ml unpreserved | C             | N/A       | 3.0                   | Y           | Absent      | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912908-20A        | Glass 250ml unpreserved | C             | N/A       | 3.0                   | Y           | Absent      | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912908  
**Report Date:** 02/02/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501111

Sample Number: L0912908-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 25.81                       | 0.00         | #4                 | 520.89                  | 520.86               | 99.9          | 0.1              |
|                             |              | #10                | 482.10                  | 482.06               | 99.7          | 0.3              |
|                             |              | #20                | 411.27                  | 411.02               | 98.8          | 1.2              |
|                             |              | #40                | 378.38                  | 377.89               | 96.9          | 3.1              |
|                             |              | #60                | 370.27                  | 369.81               | 95.1          | 4.9              |
|                             |              | #140               | 348.27                  | 347.15               | 90.7          | 9.3              |
|                             |              | #200               | 347.14                  | 346.66               | 88.9          | 11.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 88.9

Weight of hydrometer sample = 25.81

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0352         | 72.3          | 27.7             |
| 5.00                | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0227         | 61.2          | 38.8             |
| 15.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0132         | 55.7          | 44.3             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 50.2          | 49.8             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0067         | 44.6          | 55.4             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 44.6          | 55.4             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 44.6          | 55.4             |

## Fractional Components

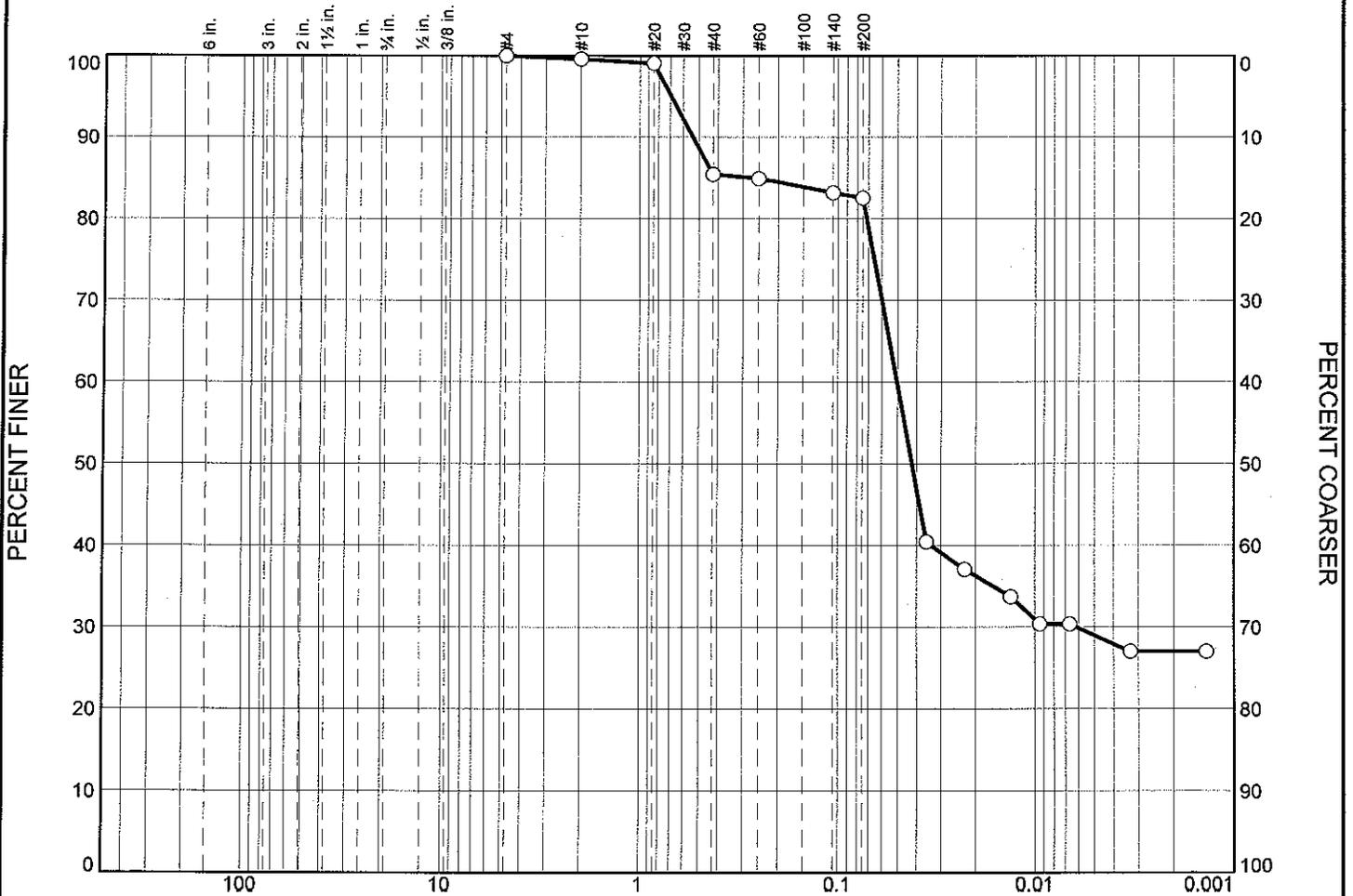
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 0.8     | 1.6  | 2.2  | 3.5  | 6.7     | 14.8  | 15.8 | 11.7 | 10.4 | 2.4     | 40.3  | 44.6 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0093 | 0.0202 | 0.0501 | 0.0629 | 0.0924 | 0.2461 |

| Fineness Modulus |
|------------------|
| 0.15             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       |                 | % Granules      | % Sand          |                 |      |                 | % Silt  |                |                |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|------|-----------------|---------|----------------|----------------|------|--------|---------|
|   |            |           |                 |                 |                 | V. Crs.         | Crs.            | Med. | Fine            | V. Fine | Crs.           | Med.           | Fine |        | V. Fine |
| ○ | 0.0        | 0.0       | 0.1             |                 | 0.3             | 0.4             | 10.6            | 3.7  | 1.4             | 11.2    | 32.9           | 4.7            | 4.3  | 2.6    | 27.8    |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> | C <sub>u</sub> |      |        |         |
| ○ |            |           | 0.2647          | 0.0503          | 0.0421          | 0.0062          |                 |      |                 |         |                |                |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501112    <b>Sample Number:</b> L0912908-02</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501112

Sample Number: L0912908-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 6.42  
 Tare Wt. = 4.65  
 Minus #200 from wash = 95.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 39.59                       | 0.00         | #4                 | 521.73                  | 521.73               | 100.0         | 0.0              |
|                             |              | #10                | 484.91                  | 484.74               | 99.6          | 0.4              |
|                             |              | #20                | 405.57                  | 405.37               | 99.1          | 0.9              |
|                             |              | #40                | 366.39                  | 361.00               | 85.5          | 14.5             |
|                             |              | #60                | 366.34                  | 366.14               | 84.9          | 15.1             |
|                             |              | #140               | 343.48                  | 342.79               | 83.2          | 16.8             |
|                             |              | #200               | 345.44                  | 345.18               | 82.5          | 17.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 82.5

Weight of hydrometer sample = 39.59

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0 | 13.9       | 0.0355         | 40.4          | 59.6             |
| 5.00                | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0 | 14.2       | 0.0227         | 37.1          | 62.9             |
| 15.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0 | 14.4       | 0.0132         | 33.7          | 66.3             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0094         | 30.4          | 69.6             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0067         | 30.4          | 69.6             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0033         | 27.0          | 73.0             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0014         | 27.0          | 73.0             |

## Fractional Components

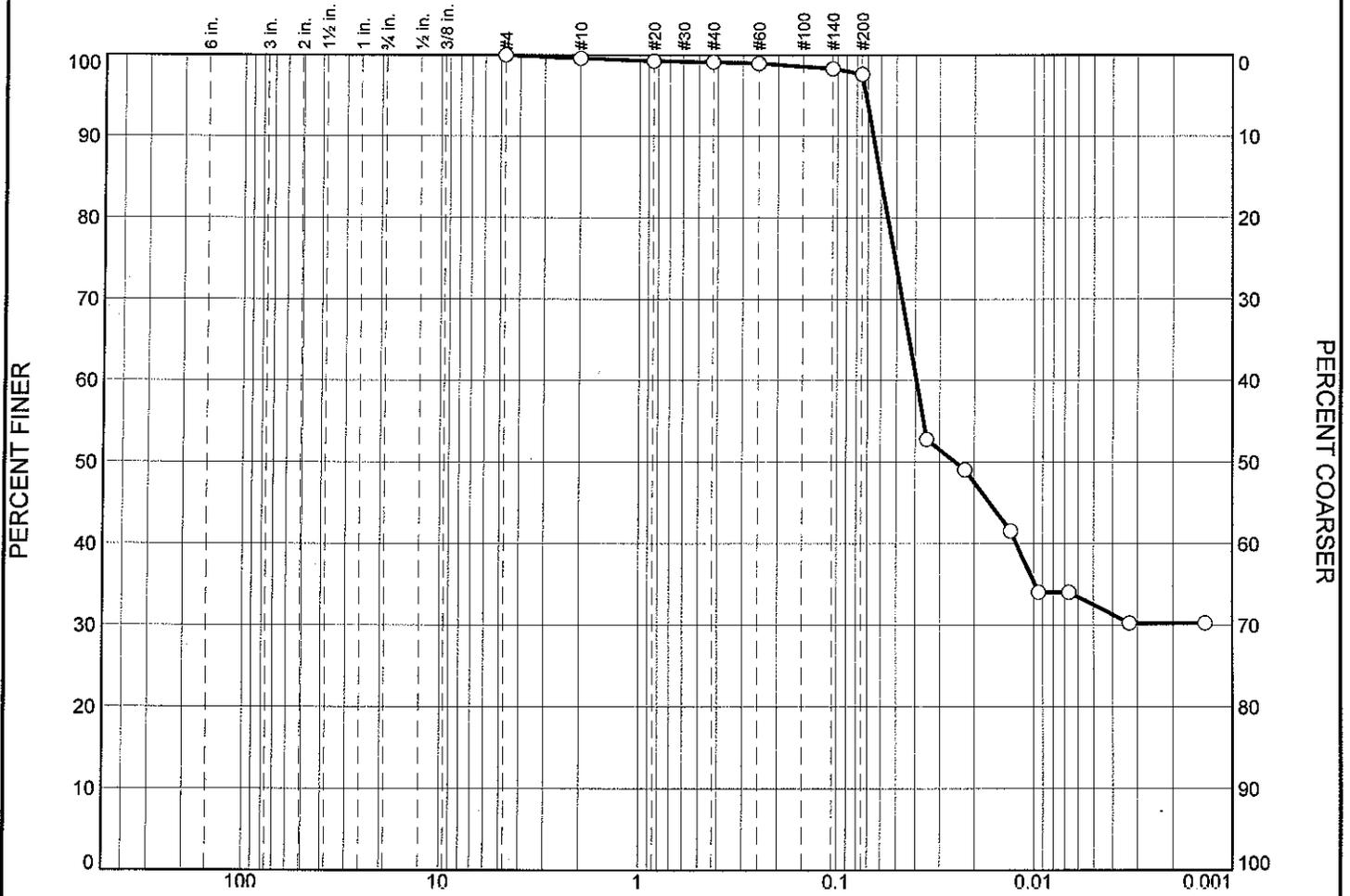
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.3      | 0.4     | 10.6 | 3.7  | 1.4  | 11.2    | 27.3  | 32.9 | 4.7  | 4.3  | 2.6     | 44.5  | 27.8 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0062          | 0.0421          | 0.0503          | 0.0717          | 0.2647          | 0.5358          | 0.6911          |

| Fineness Modulus |
|------------------|
| 0.40             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 | % Silt  |                 |      |                 | % Clay |                |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|--------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |        | V. Fine        |  |                |
| ○ |          |   |         |   |                 |   | 0.3             | 0.3     | 0.1             | 0.2  | 0.6             | 11.4    | 35.2            | 7.8  | 10.0            | 2.8    | 31.2           |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.0604          |   | 0.0394          |         | 0.0250          |      |                 |         |                 |      |                 |        |                |  |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501113     <b>Sample Number:</b> L0912908-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912908  
 Location: 501113  
 Sample Number: L0912908-03  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 5.59  
 Tare Wt. = 4.55  
 Minus #200 from wash = 97.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 41.78                       | 0.00         | #4                 | 520.87                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.22                  | 482.06               | 99.6          | 0.4              |
|                             |              | #20                | 411.16                  | 411.02               | 99.3          | 0.7              |
|                             |              | #40                | 377.94                  | 377.89               | 99.1          | 0.9              |
|                             |              | #60                | 369.88                  | 369.81               | 99.0          | 1.0              |
|                             |              | #140               | 347.42                  | 347.15               | 98.3          | 1.7              |
|                             |              | #200               | 346.95                  | 346.66               | 97.6          | 2.4              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 97.6  
 Weight of hydrometer sample = 41.78  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 52.8          | 47.2             |
| 5.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0223         | 49.0          | 51.0             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 41.5          | 58.5             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 34.0          | 66.0             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 34.0          | 66.0             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 30.3          | 69.7             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 30.3          | 69.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.3     | 0.1  | 0.2  | 0.6  | 11.4    | 12.6  | 35.2 | 7.8  | 10.0 | 2.8     | 55.8  | 31.2 |

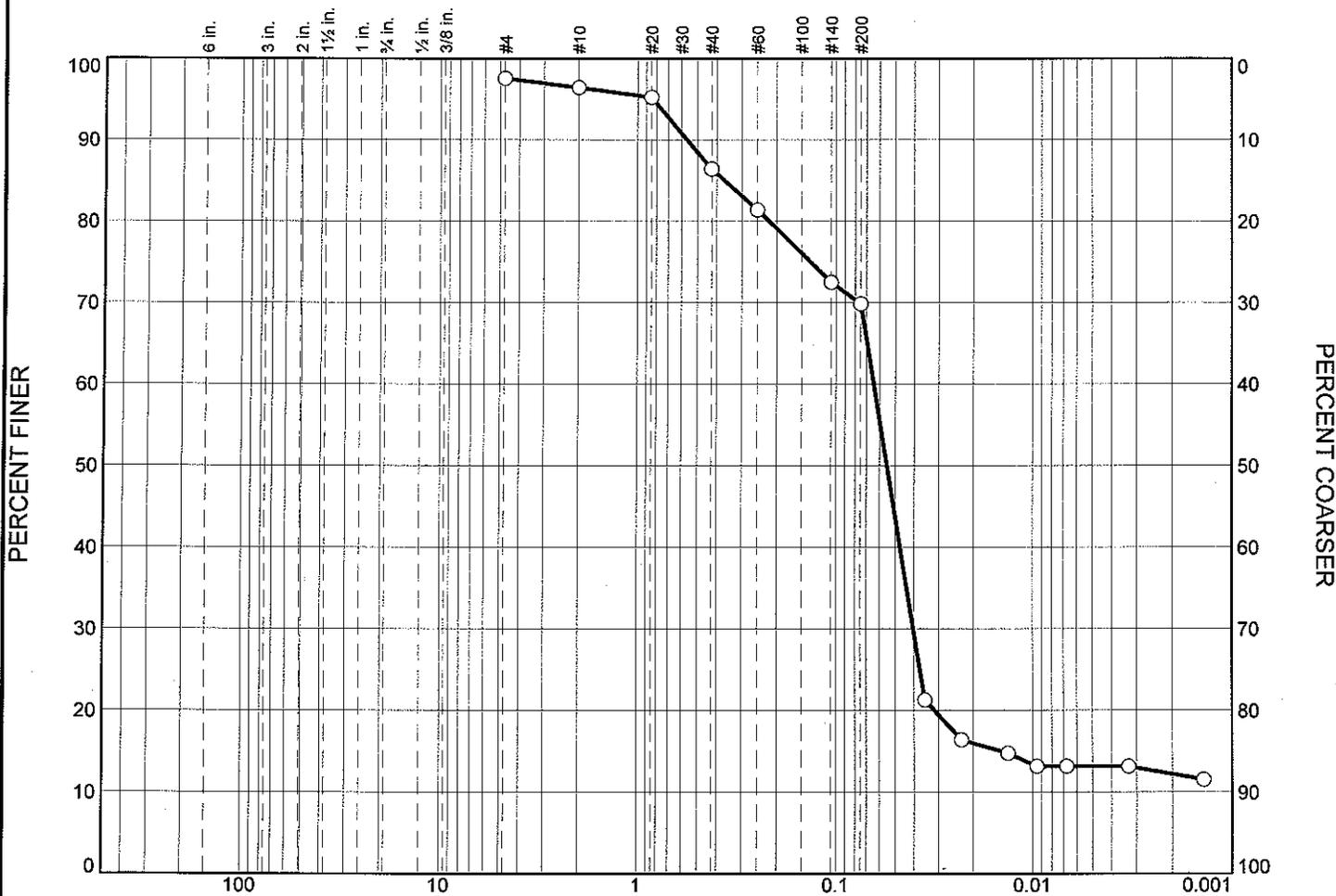
| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0250 | 0.0394 | 0.0555 | 0.0604 | 0.0658 | 0.0717 |

Fineness Modulus

0.04

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 0.9             | 0.9             | 7.0             | 7.1             | 7.2             | 16.1           | 38.3           | 4.6  | 2.1  | 0.0     | 13.1   |  |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.3660          | 0.0644          | 0.0551          | 0.0403          | 0.0145          |                 |                |                |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501126    <b>Sample Number:</b> L0912908-04</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912908  
**Location:** 501126  
**Sample Number:** L0912908-04  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.94                       | 0.00         | #4                 | 523.42                  | 521.73               | 97.5          | 2.5              |
|                             |              | #10                | 485.51                  | 484.74               | 96.4          | 3.6              |
|                             |              | #20                | 406.20                  | 405.37               | 95.2          | 4.8              |
|                             |              | #40                | 367.73                  | 361.66               | 86.4          | 13.6             |
|                             |              | #60                | 369.62                  | 366.14               | 81.4          | 18.6             |
|                             |              | #140               | 348.91                  | 342.79               | 72.5          | 27.5             |
|                             |              | #200               | 347.02                  | 345.18               | 69.8          | 30.2             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 69.8  
 Weight of hydrometer sample = 68.94  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0352         | 21.3          | 78.7             |
| 5.00                | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0229         | 16.4          | 83.6             |
| 15.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0133         | 14.8          | 85.2             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0095         | 13.1          | 86.9             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0067         | 13.1          | 86.9             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 13.1          | 86.9             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0  | 15.2       | 0.0014         | 11.5          | 88.5             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 0.9     | 7.0  | 7.1  | 7.2  | 16.1    | 38.3  | 38.3 | 4.6  | 2.1  | 0.0     | 45.0  | 13.1 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0145          | 0.0315          | 0.0403          | 0.0551          | 0.0644          | 0.2189          | 0.3660          | 0.5632          | 0.8349          |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.60                    |



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501211

Sample Number: L0912908-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 82.10                       | 0.00         | #4                 | 529.93                  | 520.86               | 89.0          | 11.0             |
|                             |              | #10                | 492.61                  | 482.06               | 76.1          | 23.9             |
|                             |              | #20                | 416.64                  | 411.02               | 69.3          | 30.7             |
|                             |              | #40                | 385.78                  | 377.89               | 59.6          | 40.4             |
|                             |              | #60                | 384.79                  | 369.81               | 41.4          | 58.6             |
|                             |              | #140               | 371.96                  | 347.15               | 11.2          | 88.8             |
|                             |              | #200               | 349.88                  | 346.66               | 7.3           | 92.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 7.3

Weight of hydrometer sample = 82.10

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0372         | 1.0           | 99.0             |
| 5.00                | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0235         | 1.0           | 99.0             |
| 15.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0136         | 1.0           | 99.0             |
| 30.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0096         | 1.0           | 99.0             |
| 60.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0068         | 1.0           | 99.0             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 1.0           | 99.0             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 1.0           | 99.0             |

## Fractional Components

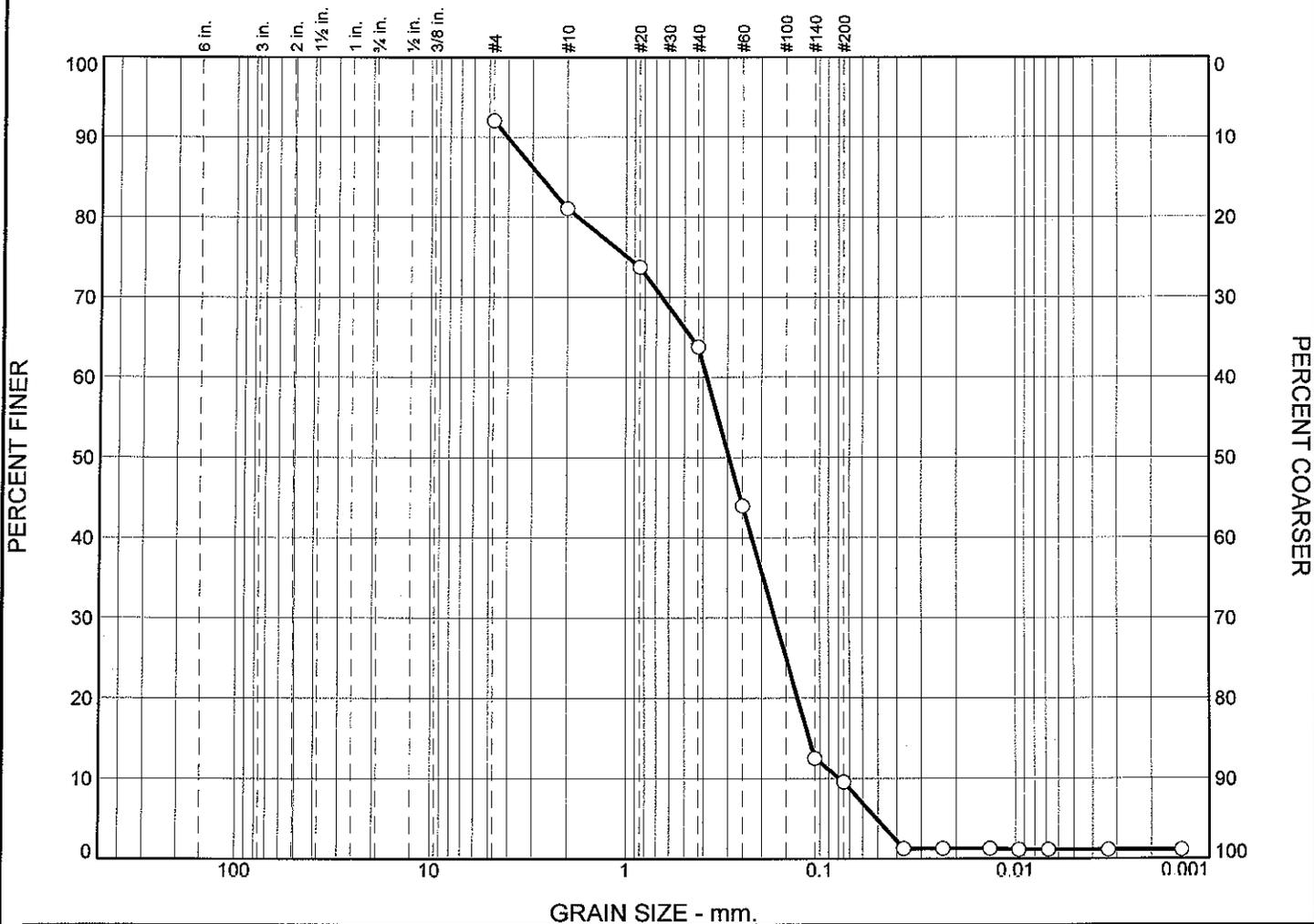
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 10.3     | 5.5     | 8.7  | 20.5 | 24.4 | 11.4    | 70.5  | 4.6  | 0.0  | 0.0  |         | 4.6   | 1.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0955          | 0.1181          | 0.1362          | 0.1809          | 0.3211          | 0.4360          | 2.6003          | 3.6406          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.25             | 4.56           | 0.79           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 | % Silt  |                 |      |                 | % Clay |                |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|--------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |        | V. Fine        |  |                |
| ○ |          |   |         |   |                 |   | 8.8             | 6.0     | 9.0             | 22.2 | 25.4            | 11.1    | 6.1             | 0.0  | 0.2             |        | 1.1            |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 2.7208          |   | 0.3841          |         | 0.2940          |      | 0.1709          |         | 0.1135          |      | 0.0792          |        | 0.96           |  | 4.85           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501212    <b>Sample Number:</b> L0912908-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501212

Sample Number: L0912908-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 96.06                       | 0.00         | #4                 | 529.33                  | 521.73               | 92.1          | 7.9              |
|                             |              | #10                | 495.31                  | 484.74               | 81.1          | 18.9             |
|                             |              | #20                | 412.41                  | 405.37               | 73.8          | 26.2             |
|                             |              | #40                | 371.24                  | 361.66               | 63.8          | 36.2             |
|                             |              | #60                | 385.21                  | 366.14               | 43.9          | 56.1             |
|                             |              | #140               | 372.98                  | 342.79               | 12.5          | 87.5             |
|                             |              | #200               | 348.03                  | 345.18               | 9.5           | 90.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 9.5

Weight of hydrometer sample = 96.06

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0369         | 1.3           | 98.7             |
| 5.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0233         | 1.3           | 98.7             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 1.3           | 98.7             |
| 30.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0096         | 1.1           | 98.9             |
| 60.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0068         | 1.1           | 98.9             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 1.1           | 98.9             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 1.1           | 98.9             |

## Fractional Components

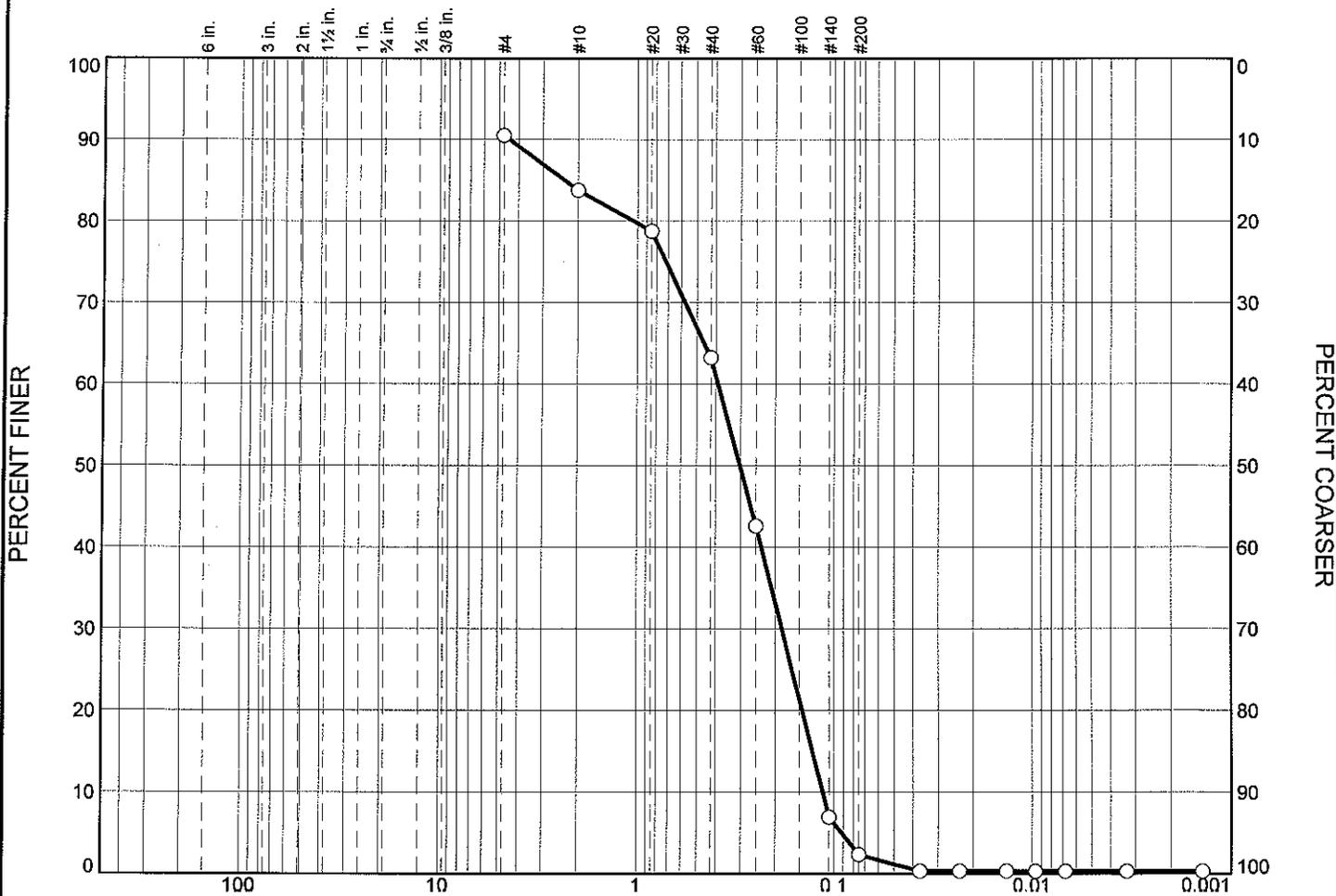
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 8.8      | 6.0     | 9.0  | 22.2 | 25.4 | 11.1    | 73.7  | 6.1  | 0.0  | 0.2  |         | 6.3   | 1.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0792          | 0.1135          | 0.1301          | 0.1709          | 0.2940          | 0.3841          | 1.7621          | 2.7208          | 4.0309          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.03             | 4.85           | 0.96           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      | Silt    |      |      |      | Clay |         |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|------|---------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |      | V. Fine |
| ○ |          |         |         | 5.4      | 4.1     | 12.8 | 24.3 | 28.8 | 12.0    | 1.5  | 0.0  | 0.0  | 0.0  | 0.3     |

| LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○  |    | 2.3389          | 0.3909          | 0.3024          | 0.1846          | 0.1287          | 0.1141          | 0.76           | 3.43           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501213    <b>Sample Number:</b> L0912908-07</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501213

Sample Number: L0912908-07

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 92.63                       | 0.00         | #4                 | 529.66                  | 520.86               | 90.5          | 9.5              |
|                             |              | #10                | 488.28                  | 482.06               | 83.8          | 16.2             |
|                             |              | #20                | 415.66                  | 411.02               | 78.8          | 21.2             |
|                             |              | #40                | 387.27                  | 372.89               | 63.3          | 36.7             |
|                             |              | #60                | 388.94                  | 369.81               | 42.6          | 57.4             |
|                             |              | #140               | 380.18                  | 347.15               | 6.9           | 93.1             |
|                             |              | #200               | 350.91                  | 346.66               | 2.4           | 97.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 2.4

Weight of hydrometer sample = 92.63

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0369         | 0.3           | 99.7             |
| 5.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0233         | 0.3           | 99.7             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 0.3           | 99.7             |
| 30.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0096         | 0.3           | 99.7             |
| 60.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0068         | 0.3           | 99.7             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 0.3           | 99.7             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 0.3           | 99.7             |

## Fractional Components

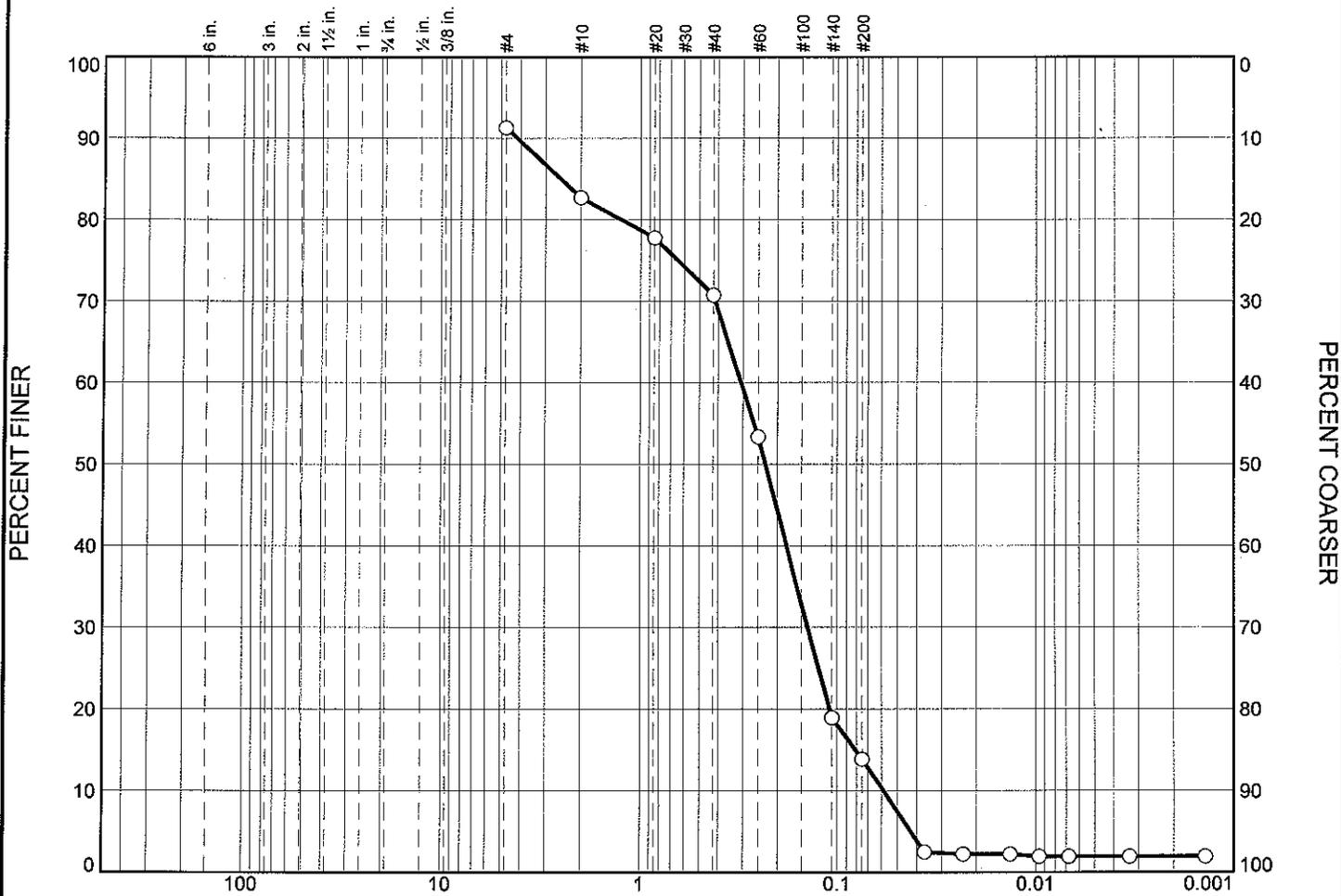
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.4      | 4.1     | 12.8 | 24.3 | 28.8 | 12.0    | 82.0  | 1.5  | 0.0  | 0.0  | 0.0     | 1.5   | 0.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1141          | 0.1287          | 0.1451          | 0.1846          | 0.3024          | 0.3909          | 1.0477          | 2.3389          | 4.4538          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.02             | 3.43           | 0.76           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 6.9             | 4.0     | 6.3             | 19.1 | 27.8            | 14.5    | 8.6             | 0.2  | 0.3             | 0.0     | 1.9            |  |                |
| ⊗ | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 2.5185          |   | 0.3064          |         | 0.2301          |      | 0.1398          |         | 0.0812          |      | 0.0588          |         | 1.08           |  | 5.21           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501226     <b>Sample Number:</b> L0912908-08</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501226

Sample Number: L0912908-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 81.20                       | 0.00         | #4                 | 528.79                  | 521.73               | 91.3          | 8.7              |
|                             |              | #10                | 491.72                  | 484.74               | 82.7          | 17.3             |
|                             |              | #20                | 409.37                  | 405.37               | 77.8          | 22.2             |
|                             |              | #40                | 367.38                  | 361.66               | 70.7          | 29.3             |
|                             |              | #60                | 380.28                  | 366.14               | 53.3          | 46.7             |
|                             |              | #140               | 370.74                  | 342.79               | 18.9          | 81.1             |
|                             |              | #200               | 349.30                  | 345.18               | 13.8          | 86.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 13.8

Weight of hydrometer sample = 81.20

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0365         | 2.5           | 97.5             |
| 5.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0233         | 2.2           | 97.8             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 2.2           | 97.8             |
| 30.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0096         | 1.9           | 98.1             |
| 60.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0068         | 1.9           | 98.1             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 1.9           | 98.1             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 1.9           | 98.1             |

## Fractional Components

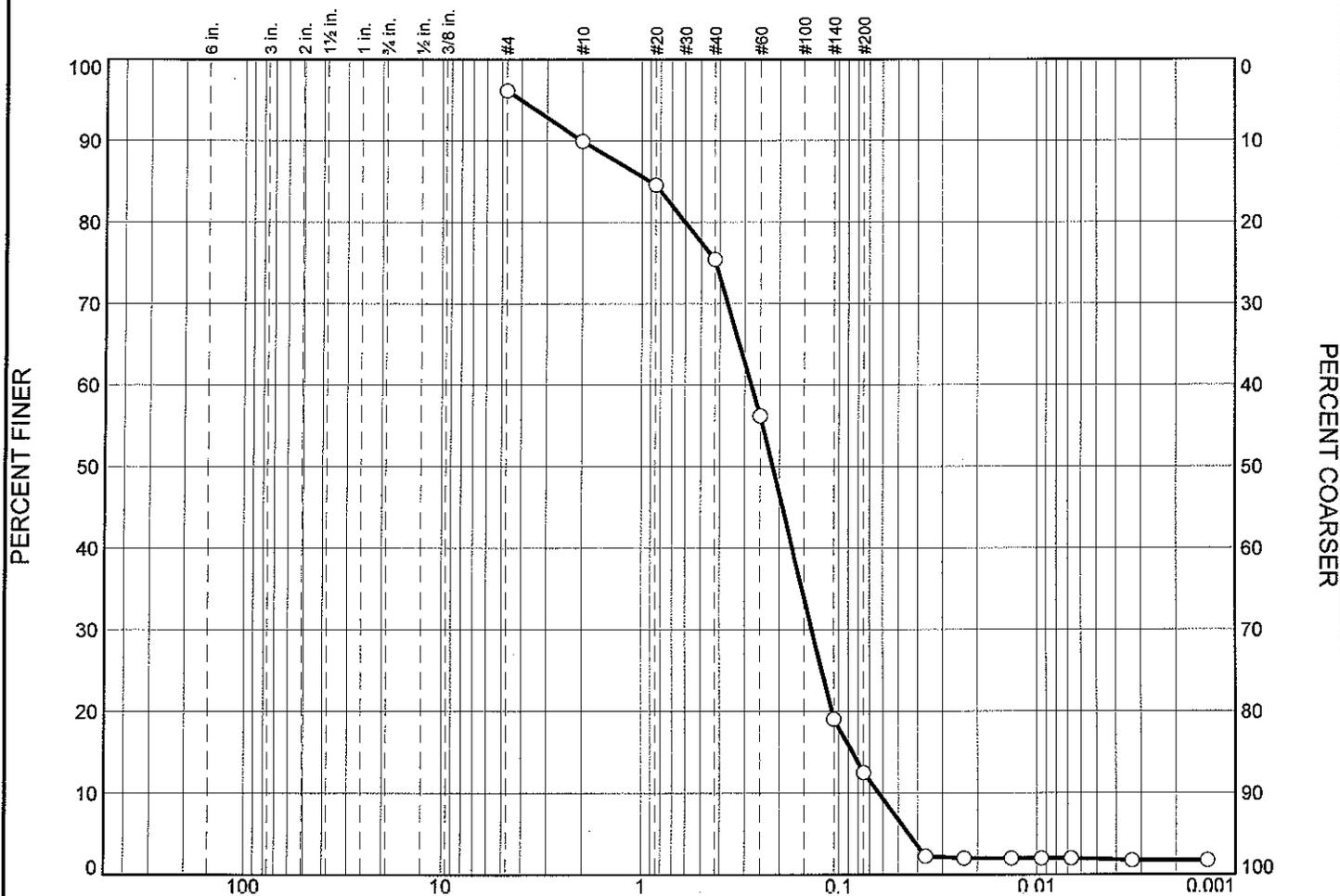
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.9      | 4.0     | 6.3  | 19.1 | 27.8 | 14.5    | 71.7  | 8.6  | 0.2  | 0.3  | 0.0     | 9.1   | 1.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0588          | 0.0812          | 0.1089          | 0.1398          | 0.2301          | 0.3064          | 1.2492          | 2.5185          | 4.1653          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.78             | 5.21           | 1.08           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 5.0             | 4.3             | 8.0             | 21.4            | 30.0            | 16.3           | 7.7            | 0.2  | 0.0  | 0.2    | 1.8     |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 0.9087          | 0.2776          | 0.2166          | 0.1365          | 0.0856          | 0.0629          | 1.07           | 4.41           |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912908     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501226     <b>Sample Number:</b> WG382945-1</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912908  
 Location: 501226  
 Sample Number: WG382945-1  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 80.69                       | 0.00         | #4                 | 523.96                  | 520.86               | 96.2          | 3.8              |
|                             |              | #10                | 487.09                  | 482.06               | 89.9          | 10.1             |
|                             |              | #20                | 415.33                  | 411.02               | 84.6          | 15.4             |
|                             |              | #40                | 385.29                  | 377.89               | 75.4          | 24.6             |
|                             |              | #60                | 385.30                  | 369.81               | 56.2          | 43.8             |
|                             |              | #140               | 377.14                  | 347.15               | 19.0          | 81.0             |
|                             |              | #200               | 351.94                  | 346.66               | 12.5          | 87.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 12.5  
 Weight of hydrometer sample = 80.69  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0365         | 2.3           | 97.7             |
| 5.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0233         | 2.0           | 98.0             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 2.0           | 98.0             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 2.0           | 98.0             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 2.0           | 98.0             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 1.8           | 98.2             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 1.8           | 98.2             |

## Fractional Components

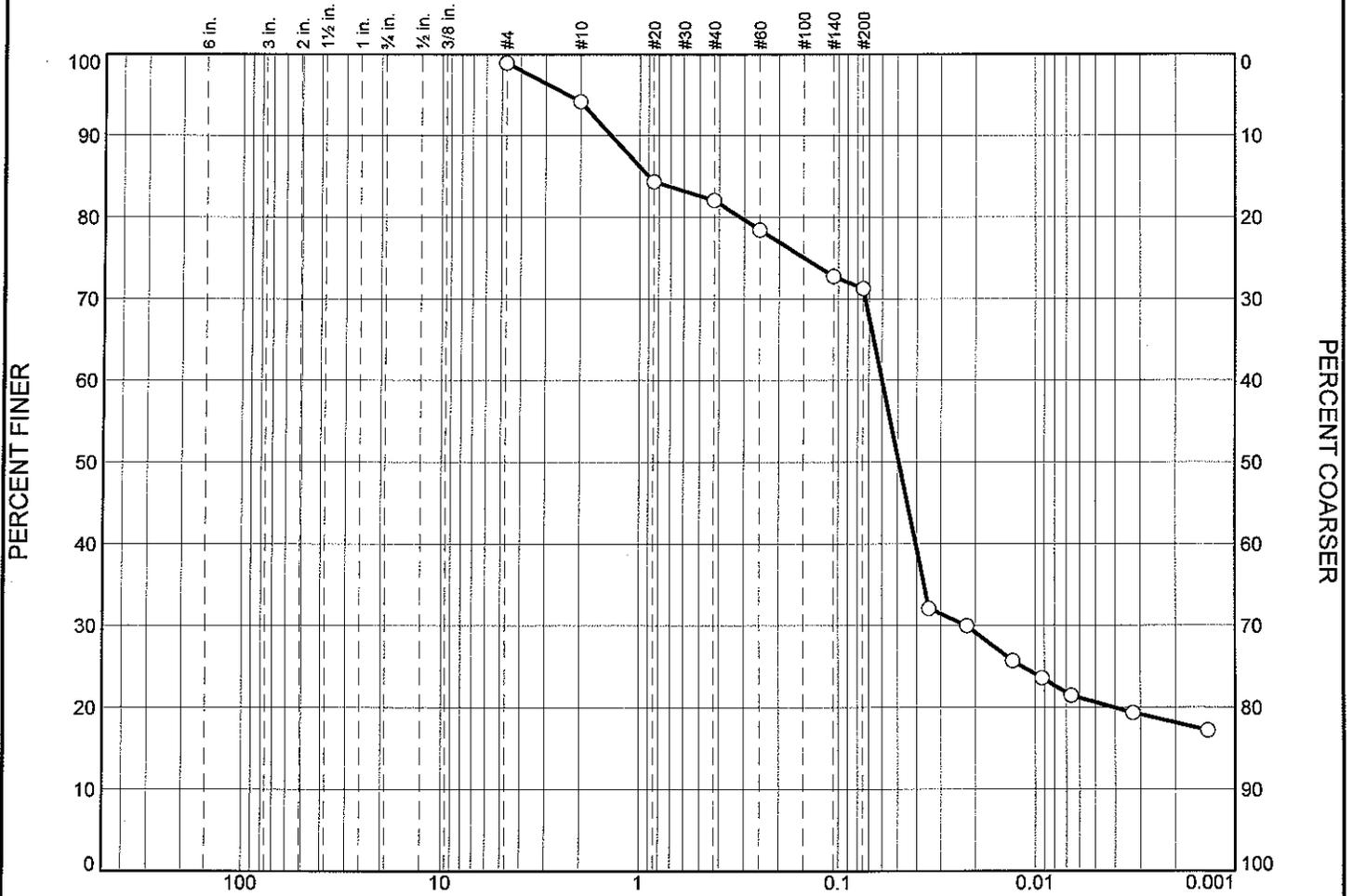
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.0      | 4.3     | 8.0  | 21.4 | 30.0 | 16.3    | 80.0  | 7.7  | 0.2  | 0.0  | 0.2     | 8.1   | 1.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0629          | 0.0856          | 0.1084          | 0.1365          | 0.2166          | 0.2776          | 0.6012          | 0.9087          | 2.0211          | 4.0448          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.49             | 4.41           | 1.07           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |                 | 3.8             | 8.0             | 3.6             | 4.2             | 4.6             | 11.8           | 30.4           | 4.4  | 4.7  | 2.7     | 19.8   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.8998          | 0.0600          | 0.0492          | 0.0222          |                 |                 |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** L0912908    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 501311    **Sample Number:** L0912908-09  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501311

Sample Number: L0912908-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 53.72                       | 0.00         | #4                 | 522.30                  | 521.73               | 98.9          | 1.1              |
|                             |              | #10                | 487.29                  | 484.74               | 94.2          | 5.8              |
|                             |              | #20                | 410.66                  | 405.37               | 84.3          | 15.7             |
|                             |              | #40                | 362.88                  | 361.66               | 82.1          | 17.9             |
|                             |              | #60                | 368.09                  | 366.14               | 78.4          | 21.6             |
|                             |              | #140               | 345.86                  | 342.79               | 72.7          | 27.3             |
|                             |              | #200               | 345.98                  | 345.18               | 71.2          | 28.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 71.2

Weight of hydrometer sample = 53.72

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0150         | 1.0151            | 0.0135 | 12.0 | 13.1       | 0.0345         | 32.1          | 67.9             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0221         | 30.0          | 70.0             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0130         | 25.7          | 74.3             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 23.6          | 76.4             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0066         | 21.4          | 78.6             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 19.3          | 80.7             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 17.2          | 82.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.8      | 8.0     | 3.6  | 4.2  | 4.6  | 11.8    | 32.2  | 30.4 | 4.4  | 4.7  | 2.7     | 42.2  | 19.8 |

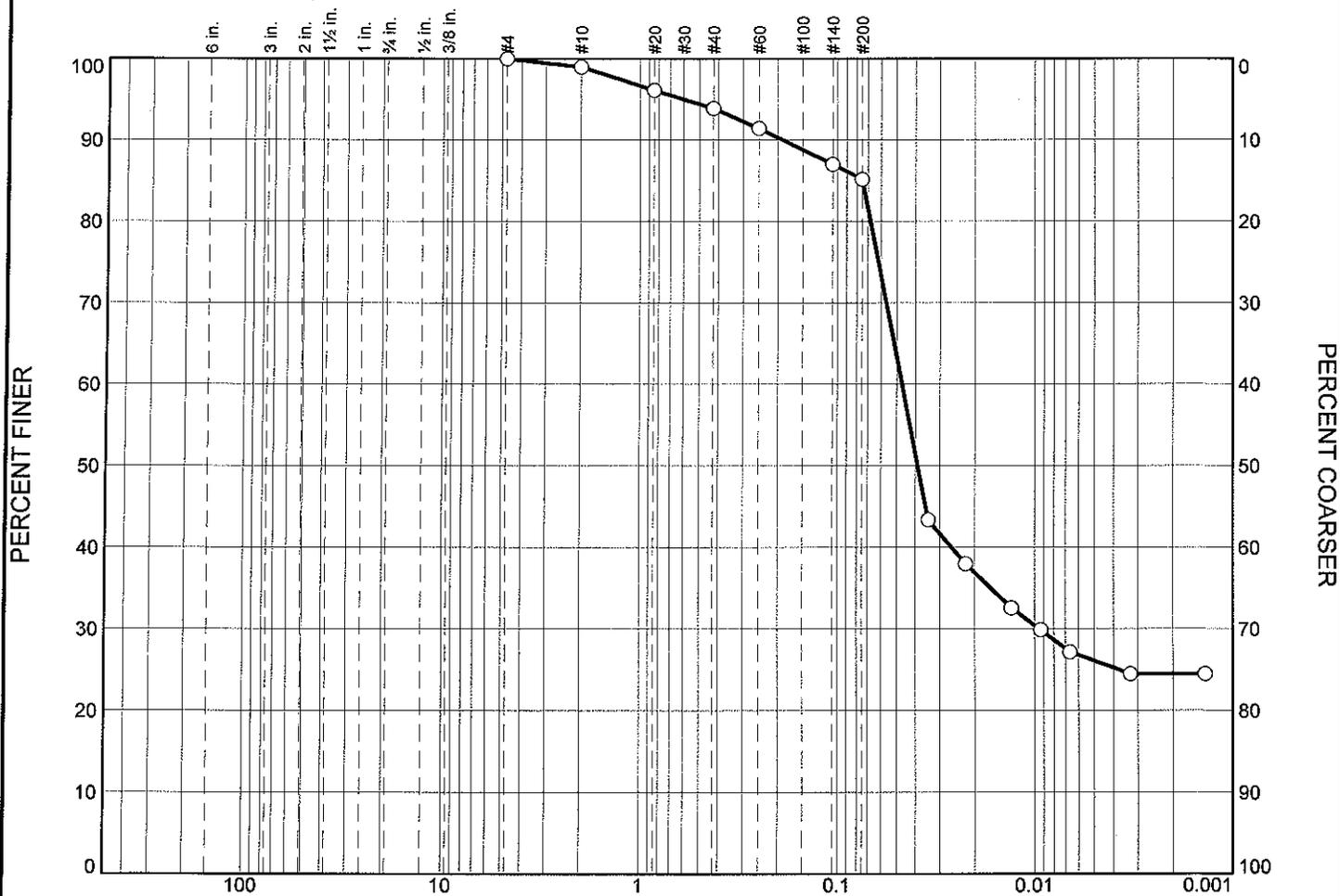
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0041          | 0.0222          | 0.0492          | 0.0600          | 0.3139          | 0.8998          | 1.3894          | 2.3172          |

Fineness Modulus

0.80

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 0.8        | 2.3     | 2.3    | 3.0  | 3.5  | 12.5    | 33.3   | 7.7  | 6.0  | 3.3     | 25.1   |
| × | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.0748    | 0.0469     | 0.0389  | 0.0095 |      |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501312    <b>Sample Number:</b> L0912908-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501312

Sample Number: L0912908-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.93                       | 0.00         | #4                 | 520.87                  | 520.86               | 100.0         | 0.0              |
|                             |              | #10                | 482.57                  | 482.06               | 99.0          | 1.0              |
|                             |              | #20                | 412.48                  | 411.02               | 96.1          | 3.9              |
|                             |              | #40                | 379.02                  | 377.89               | 93.9          | 6.1              |
|                             |              | #60                | 371.07                  | 369.81               | 91.4          | 8.6              |
|                             |              | #140               | 349.40                  | 347.15               | 87.0          | 13.0             |
|                             |              | #200               | 347.60                  | 346.66               | 85.2          | 14.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 85.2

Weight of hydrometer sample = 50.93

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.63

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0160         | 1.0161            | 0.0136 | 13.0 | 12.9       | 0.0344         | 43.3          | 56.7             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0136 | 11.0 | 13.4       | 0.0222         | 38.0          | 62.0             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0136 | 9.0  | 13.9       | 0.0131         | 32.6          | 67.4             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0136 | 8.0  | 14.2       | 0.0093         | 29.9          | 70.1             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0136 | 7.0  | 14.4       | 0.0067         | 27.2          | 72.8             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0136 | 6.0  | 14.7       | 0.0033         | 24.5          | 75.5             |
| 1440.00             | 21.0            | 1.0090         | 1.0091            | 0.0136 | 6.0  | 14.7       | 0.0014         | 24.5          | 75.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 2.3     | 2.3  | 3.0  | 3.5  | 12.5    | 23.6  | 33.3 | 7.7  | 6.0  | 3.3     | 50.3  | 25.1 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0095 | 0.0389 | 0.0469 | 0.0681 | 0.0748 | 0.1898 | 0.6005 |

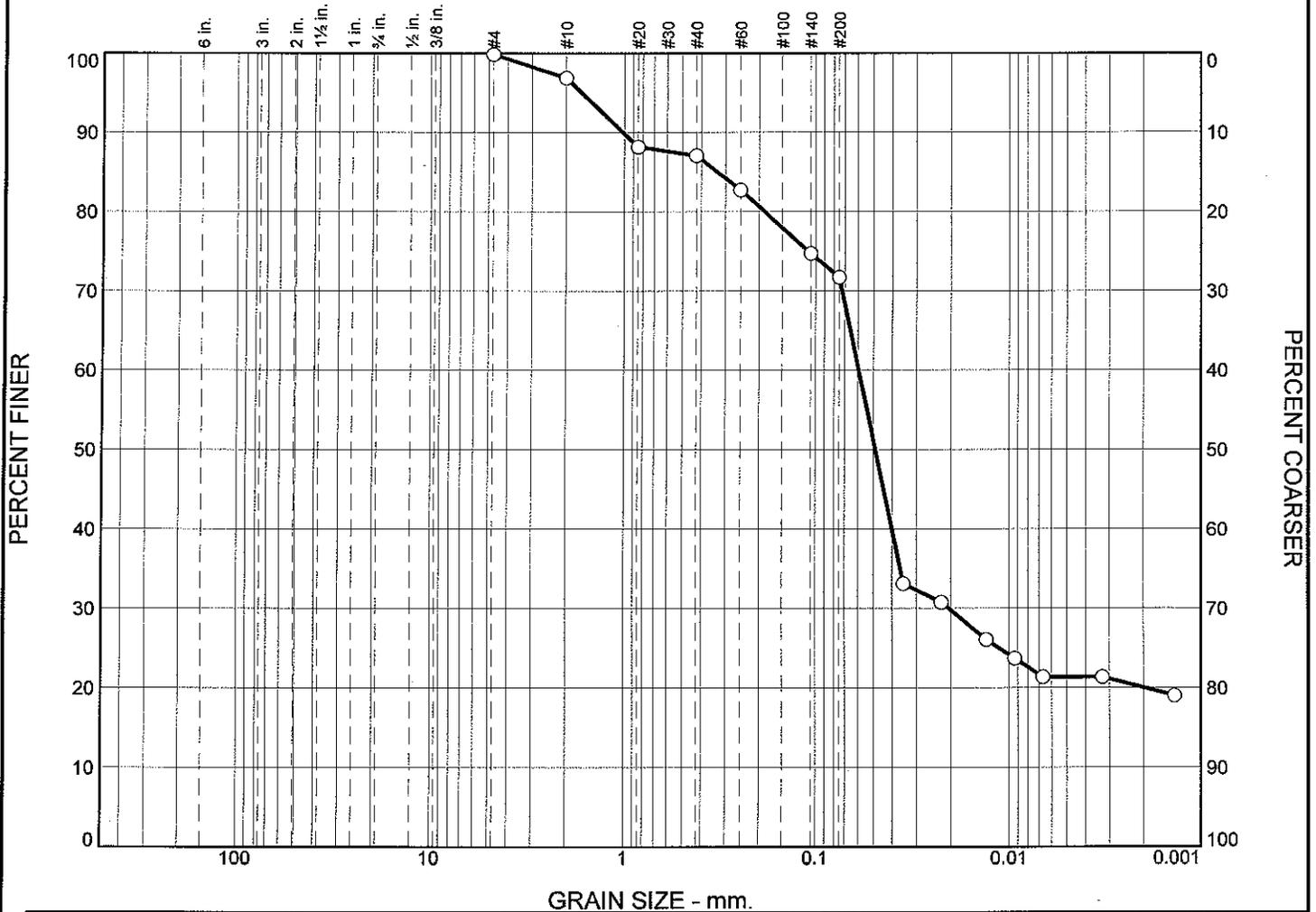
Fineness

Modulus

0.28

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 2.4             | 7.1             | 2.5             | 4.6             | 6.5             | 13.7           | 30.0           | 4.9  | 5.2  | 1.1     | 21.3   |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.3303          | 0.0595          | 0.0488          | 0.0205          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912908      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring

○ **Source of Sample:** 501313      **Sample Number:** L0912908-11

**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912908  
 Location: 501313  
 Sample Number: L0912908-11  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 18.93                       | 0.00         | #4                 | 521.76                  | 521.73               | 99.8          | 0.2              |
|                             |              | #10                | 485.30                  | 484.74               | 96.9          | 3.1              |
|                             |              | #20                | 407.02                  | 405.37               | 88.2          | 11.8             |
|                             |              | #40                | 361.87                  | 361.66               | 87.1          | 12.9             |
|                             |              | #60                | 366.96                  | 366.14               | 82.7          | 17.3             |
|                             |              | #140               | 344.31                  | 342.79               | 74.7          | 25.3             |
|                             |              | #200               | 345.75                  | 345.18               | 71.7          | 28.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 71.7  
 Weight of hydrometer sample = 48.93  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 33.1          | 66.9             |
| 5.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0223         | 30.7          | 69.3             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 26.0          | 74.0             |
| 30.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0094         | 23.7          | 76.3             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 21.3          | 78.7             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 21.3          | 78.7             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 19.0          | 81.0             |

## Fractional Components

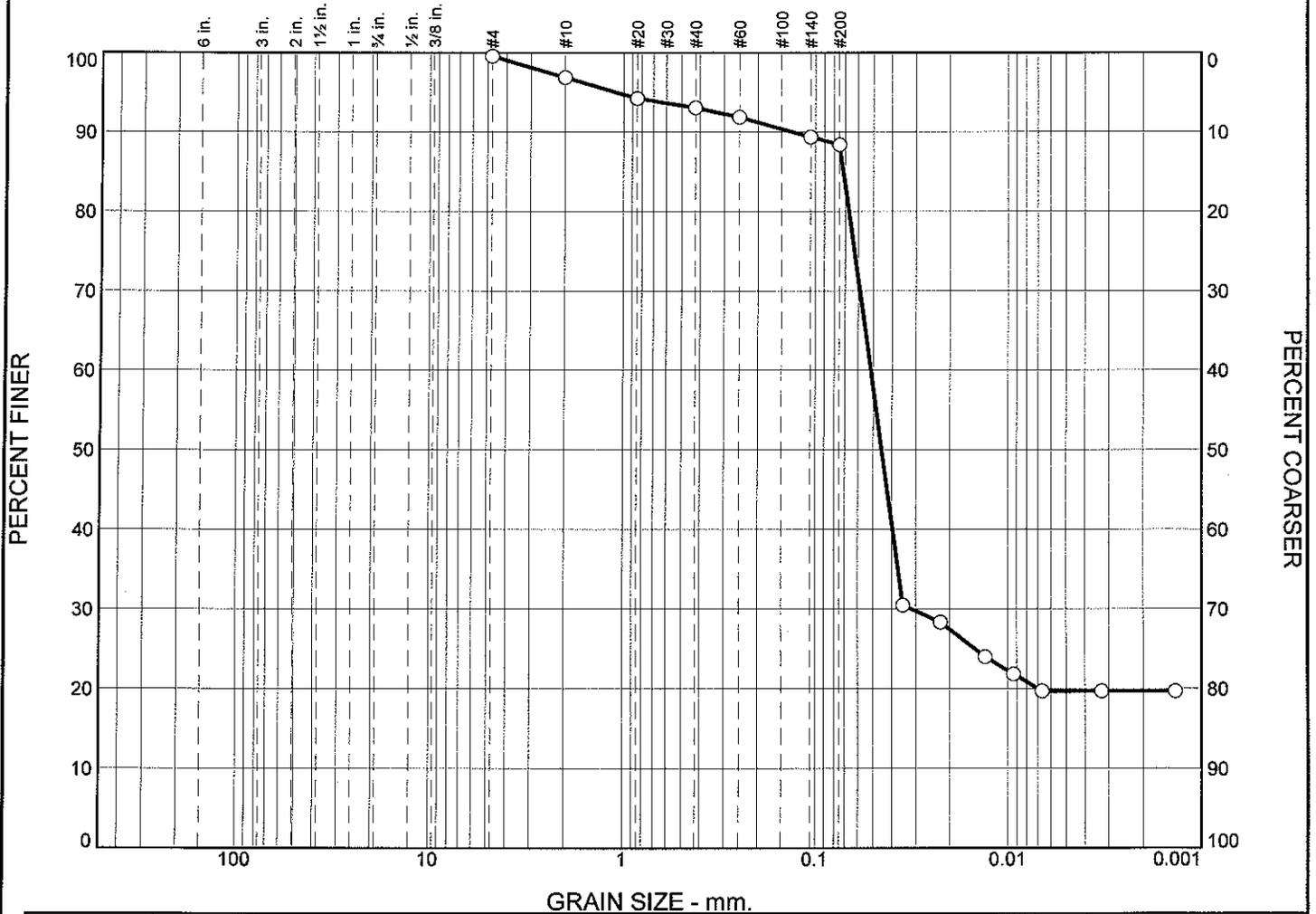
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.4      | 7.1     | 2.5  | 4.6  | 6.5  | 13.7    | 34.4  | 30.0 | 4.9  | 5.2  | 1.1     | 41.2  | 21.3 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0020          | 0.0205          | 0.0488          | 0.0595          | 0.1868          | 0.3303          | 1.0176          | 1.6624          |

Fineness Modulus

0.61

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | % Sand  |        |      |      |         | % Silt |      |      |         | % Clay |
|---|----------|---------|---------|----------|---------|--------|------|------|---------|--------|------|------|---------|--------|
|   |          |         |         |          | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |         |         | 2.1      | 2.2     | 1.4    | 1.4  | 2.0  | 15.3    | 44.7   | 4.5  | 4.7  | 1.0     | 19.7   |
| × | LL       | PL      | D85     | D60      | D50     | D30    | D15  | D10  | Cc      | Cu     |      |      |         |        |
| ○ |          |         | 0.0717  | 0.0515   | 0.0451  | 0.0315 |      |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912908      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 501326      **Sample Number:** L0912908-12  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912908  
 Location: 501326  
 Sample Number: L0912908-12  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.49                       | 0.00         | #4                 | 522.02                  | 521.73               | 99.6          | 0.4              |
|                             |              | #10                | 483.83                  | 482.06               | 96.9          | 3.1              |
|                             |              | #20                | 412.74                  | 411.02               | 94.2          | 5.8              |
|                             |              | #40                | 378.65                  | 377.89               | 93.1          | 6.9              |
|                             |              | #60                | 370.60                  | 369.81               | 91.9          | 8.1              |
|                             |              | #140               | 348.78                  | 347.15               | 89.4          | 10.6             |
|                             |              | #200               | 347.30                  | 346.66               | 88.4          | 11.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 88.4  
 Weight of hydrometer sample = 65.49  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 30.5          | 69.5             |
| 5.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0223         | 28.3          | 71.7             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 24.0          | 76.0             |
| 30.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0094         | 21.8          | 78.2             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 19.7          | 80.3             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 19.7          | 80.3             |
| 1440.00             | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0014         | 19.7          | 80.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.1      | 2.2     | 1.4  | 1.4  | 2.0  | 15.3    | 22.3  | 44.7 | 4.5  | 4.7  | 1.0     | 54.9  | 19.7 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0070          | 0.0315          | 0.0451          | 0.0515          | 0.0671          | 0.0717          | 0.1316          | 1.0930          |

Fineness  
Modulus

0.32

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501411

Sample Number: L0912908-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 89.97                       | 0.00         | #4                 | 533.46                  | 521.73               | 87.0          | 13.0             |
|                             |              | #10                | 492.14                  | 484.74               | 78.7          | 21.3             |
|                             |              | #20                | 415.37                  | 405.37               | 67.6          | 32.4             |
|                             |              | #40                | 371.53                  | 361.66               | 56.7          | 43.3             |
|                             |              | #60                | 378.52                  | 366.14               | 42.9          | 57.1             |
|                             |              | #140               | 360.07                  | 342.79               | 23.7          | 76.3             |
|                             |              | #200               | 347.63                  | 345.18               | 21.0          | 79.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 21.0

Weight of hydrometer sample = 89.97

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0365         | 3.4           | 96.6             |
| 5.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0233         | 3.0           | 97.0             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 3.0           | 97.0             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 3.0           | 97.0             |
| 60.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0068         | 2.6           | 97.4             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 2.6           | 97.4             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 2.6           | 97.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.6      | 9.0     | 10.5 | 16.3 | 15.5 | 10.9    | 62.2  | 13.2 | 0.3  | 0.2  | 0.2     | 13.9  | 2.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0479          | 0.0588          | 0.0721          | 0.1405          | 0.3288          | 0.5251          | 2.2840          | 3.8643          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.20             | 10.96          | 0.79           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501412

Sample Number: L0912908-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 84.07                       | 0.00         | #4                 | 525.19                  | 520.86               | 94.8          | 5.2              |
|                             |              | #10                | 489.98                  | 482.06               | 85.4          | 14.6             |
|                             |              | #20                | 421.45                  | 411.02               | 73.0          | 27.0             |
|                             |              | #40                | 389.05                  | 377.89               | 59.7          | 40.3             |
|                             |              | #60                | 383.11                  | 369.81               | 43.9          | 56.1             |
|                             |              | #140               | 367.12                  | 347.15               | 20.2          | 79.8             |
|                             |              | #200               | 350.30                  | 346.66               | 15.8          | 84.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 15.8

Weight of hydrometer sample = 84.07

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0365         | 2.7           | 97.3             |
| 5.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0231         | 2.7           | 97.3             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 2.4           | 97.6             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 2.4           | 97.6             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 2.4           | 97.6             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0033         | 2.4           | 97.6             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0014         | 2.4           | 97.6             |

## Fractional Components

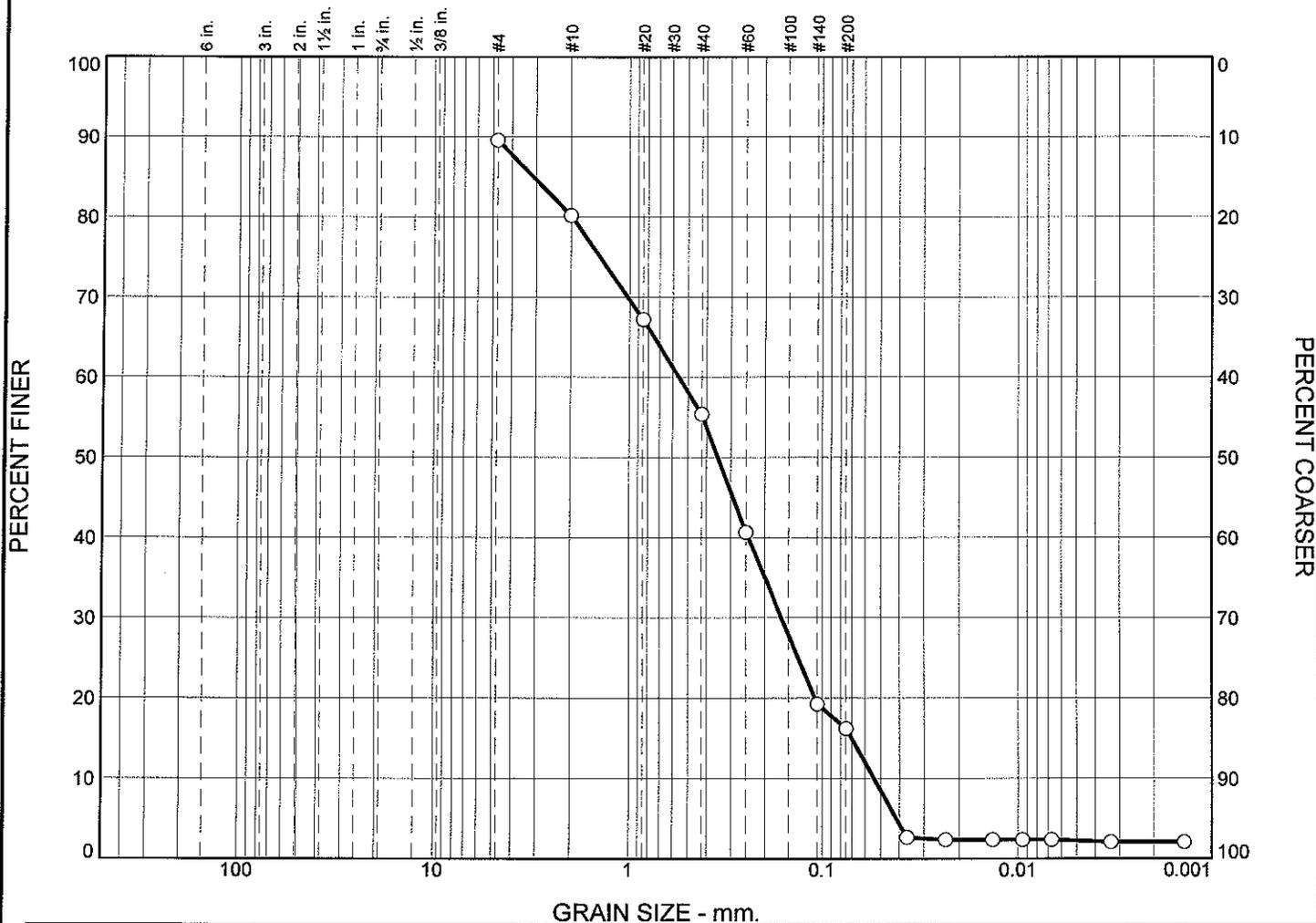
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.6      | 10.0    | 12.5 | 19.0 | 19.2 | 12.2    | 72.9  | 9.8  | 0.2  | 0.1  |         | 10.1  | 2.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0544          | 0.0716          | 0.1046          | 0.1512          | 0.3065          | 0.4306          | 1.3754          | 1.9417          | 3.0431          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.95             | 7.91           | 0.98           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |          |         |                 | 7.5             | 10.5            | 11.6            | 17.5            | 17.3            | 10.6           | 10.2           | 0.1  | 0.0  | 0.3     | 2.1    |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |          |         | 3.1164          | 0.5581          | 0.3504          | 0.1632          | 0.0705          | 0.0540          | 0.88           | 10.33          |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912908     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 501413     **Sample Number:** L0912908-15  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912908  
 Location: 501413  
 Sample Number: L0912908-15  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 89.09                       | 0.00         | #4                 | 531.02                  | 521.73               | 89.6          | 10.4             |
|                             |              | #10                | 493.10                  | 484.74               | 80.2          | 19.8             |
|                             |              | #20                | 416.96                  | 405.37               | 67.2          | 32.8             |
|                             |              | #40                | 372.20                  | 361.66               | 55.3          | 44.7             |
|                             |              | #60                | 379.24                  | 366.14               | 40.6          | 59.4             |
|                             |              | #140               | 361.87                  | 342.79               | 19.2          | 80.8             |
|                             |              | #200               | 347.90                  | 345.18               | 16.2          | 83.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 16.2  
 Weight of hydrometer sample = 89.09  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0365         | 2.6           | 97.4             |
| 5.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0233         | 2.4           | 97.6             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 2.4           | 97.6             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 2.4           | 97.6             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 2.4           | 97.6             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 2.1           | 97.9             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 2.1           | 97.9             |

## Fractional Components

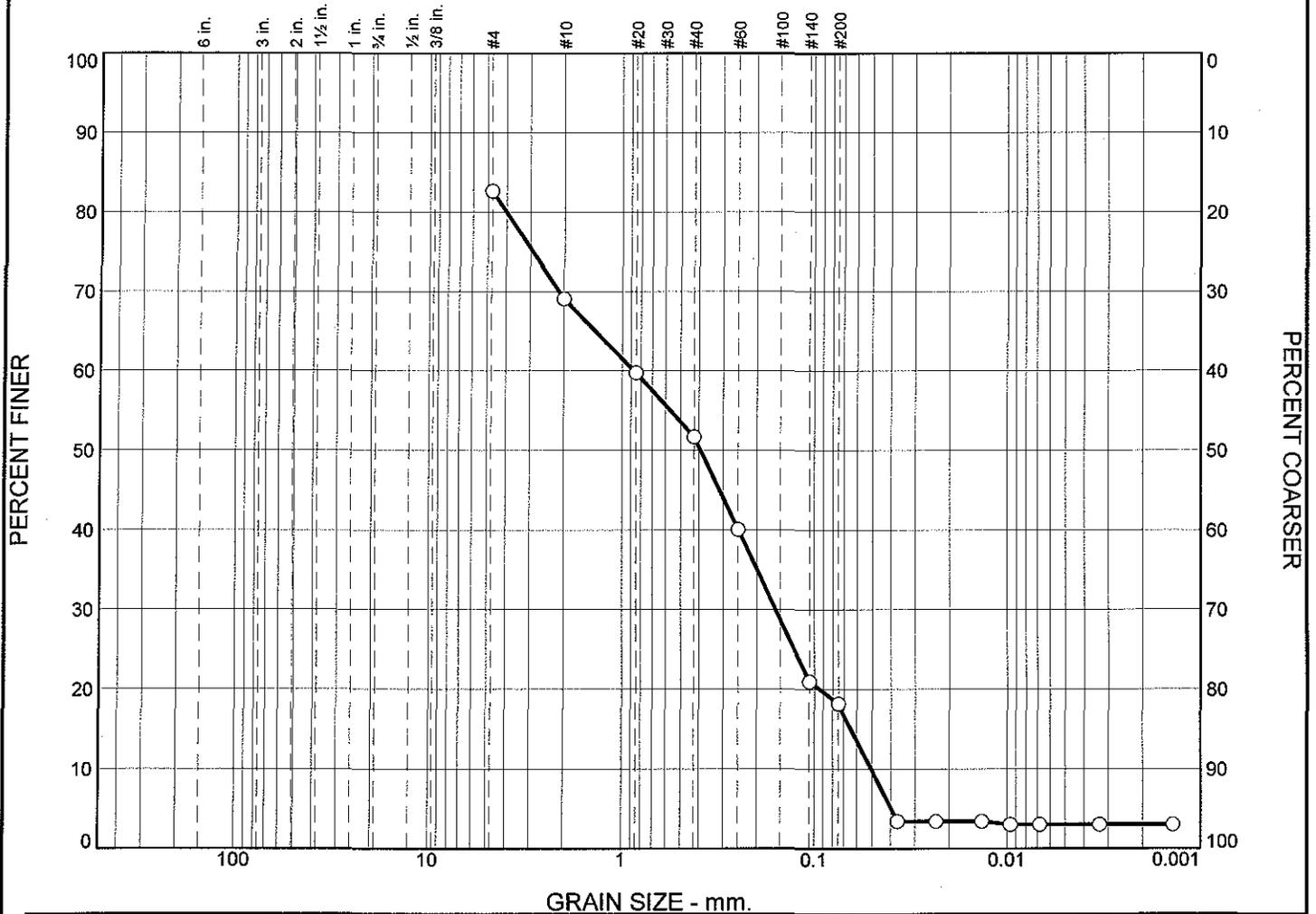
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.5      | 10.5    | 11.6 | 17.5 | 17.3 | 10.6    | 67.5  | 10.2 | 0.1  | 0.0  | 0.3     | 10.6  | 2.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0540          | 0.0705          | 0.1093          | 0.1632          | 0.3504          | 0.5581          | 1.9753          | 3.1164          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.21             | 10.33          | 0.88           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |     |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|-----|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |     |                |
| ○ |          |   |         |   |                 |   | 10.8            | 7.6     | 7.9             | 13.6 | 15.4            | 10.2    | 11.0            | 0.0  | 0.4             |         |                | 3.0 |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |     | C <sub>u</sub> |
| ○ |          |   |         |   |                 |   | 0.8686          |         | 0.3932          |      | 0.1592          |         | 0.0643          |      | 0.0506          |         | 0.58           |     | 17.17          |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912908    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501426    <b>Sample Number:</b> L0912908-16</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912908  
 Location: 501426  
 Sample Number: L0912908-16  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.67                       | 0.00         | #4                 | 532.78                  | 520.86               | 82.6          | 17.4             |
|                             |              | #10                | 491.38                  | 482.06               | 69.1          | 30.9             |
|                             |              | #20                | 417.41                  | 411.02               | 59.8          | 40.2             |
|                             |              | #40                | 383.42                  | 377.89               | 51.7          | 48.3             |
|                             |              | #60                | 377.32                  | 369.31               | 40.0          | 60.0             |
|                             |              | #140               | 360.26                  | 347.15               | 21.0          | 79.0             |
|                             |              | #200               | 348.56                  | 346.66               | 18.2          | 81.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 18.2  
 Weight of hydrometer sample = 68.67  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0369         | 3.4           | 96.6             |
| 5.00                | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0233         | 3.4           | 96.6             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 3.4           | 96.6             |
| 30.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0096         | 3.0           | 97.0             |
| 60.00               | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0068         | 3.0           | 97.0             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 3.0           | 97.0             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 3.0           | 97.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 10.8     | 7.6     | 7.9  | 13.6 | 15.4 | 10.2    | 54.7  | 11.0 | 0.0  | 0.4  |         | 11.4  | 3.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0506          | 0.0643          | 0.0941          | 0.1592          | 0.3932          | 0.8686          | 4.0140          |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.54             | 17.17          | 0.58           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501511

Sample Number: L0912908-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 56.83                       | 0.00         | #4                 | 522.00                  | 521.73               | 99.5          | 0.5              |
|                             |              | #10                | 487.59                  | 484.74               | 94.5          | 5.5              |
|                             |              | #20                | 408.49                  | 405.37               | 89.0          | 11.0             |
|                             |              | #40                | 366.01                  | 361.66               | 81.4          | 18.6             |
|                             |              | #60                | 372.55                  | 366.14               | 70.1          | 29.9             |
|                             |              | #140               | 351.45                  | 342.79               | 54.8          | 45.2             |
|                             |              | #200               | 346.86                  | 345.18               | 51.9          | 48.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 51.9

Weight of hydrometer sample = 56.83

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0 | 13.9       | 0.0355         | 17.7          | 82.3             |
| 5.00                | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0 | 14.2       | 0.0227         | 16.2          | 83.8             |
| 15.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0133         | 13.3          | 86.7             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0094         | 13.3          | 86.7             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0067         | 13.3          | 86.7             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0033         | 11.8          | 88.2             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0014         | 11.8          | 88.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.0      | 4.4     | 6.9  | 13.1 | 12.3 | 14.3    | 51.0  | 26.3 | 3.0  | 0.9  | 1.1     | 31.3  | 12.2 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0182          | 0.0374          | 0.0465          | 0.0720          | 0.1417          | 0.3986          | 0.5906          | 0.9903          | 2.1764          |

Fineness Modulus

0.94

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501512

Sample Number: L0912908-18

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.69                       | 0.00         | #4                 | 521.55                  | 520.86               | 98.9          | 1.1              |
|                             |              | #10                | 483.36                  | 482.06               | 96.8          | 3.2              |
|                             |              | #20                | 414.66                  | 411.02               | 91.0          | 9.0              |
|                             |              | #40                | 381.82                  | 377.89               | 84.8          | 15.2             |
|                             |              | #60                | 375.89                  | 369.81               | 75.1          | 24.9             |
|                             |              | #140               | 356.25                  | 347.15               | 60.5          | 39.5             |
|                             |              | #200               | 349.09                  | 346.66               | 56.7          | 43.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 56.7

Weight of hydrometer sample = 62.69

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 20.4          | 79.6             |
| 5.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0223         | 19.0          | 81.0             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 16.1          | 83.9             |
| 30.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0094         | 14.6          | 85.4             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 13.2          | 86.8             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 13.2          | 86.8             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 11.7          | 88.3             |

## Fractional Components

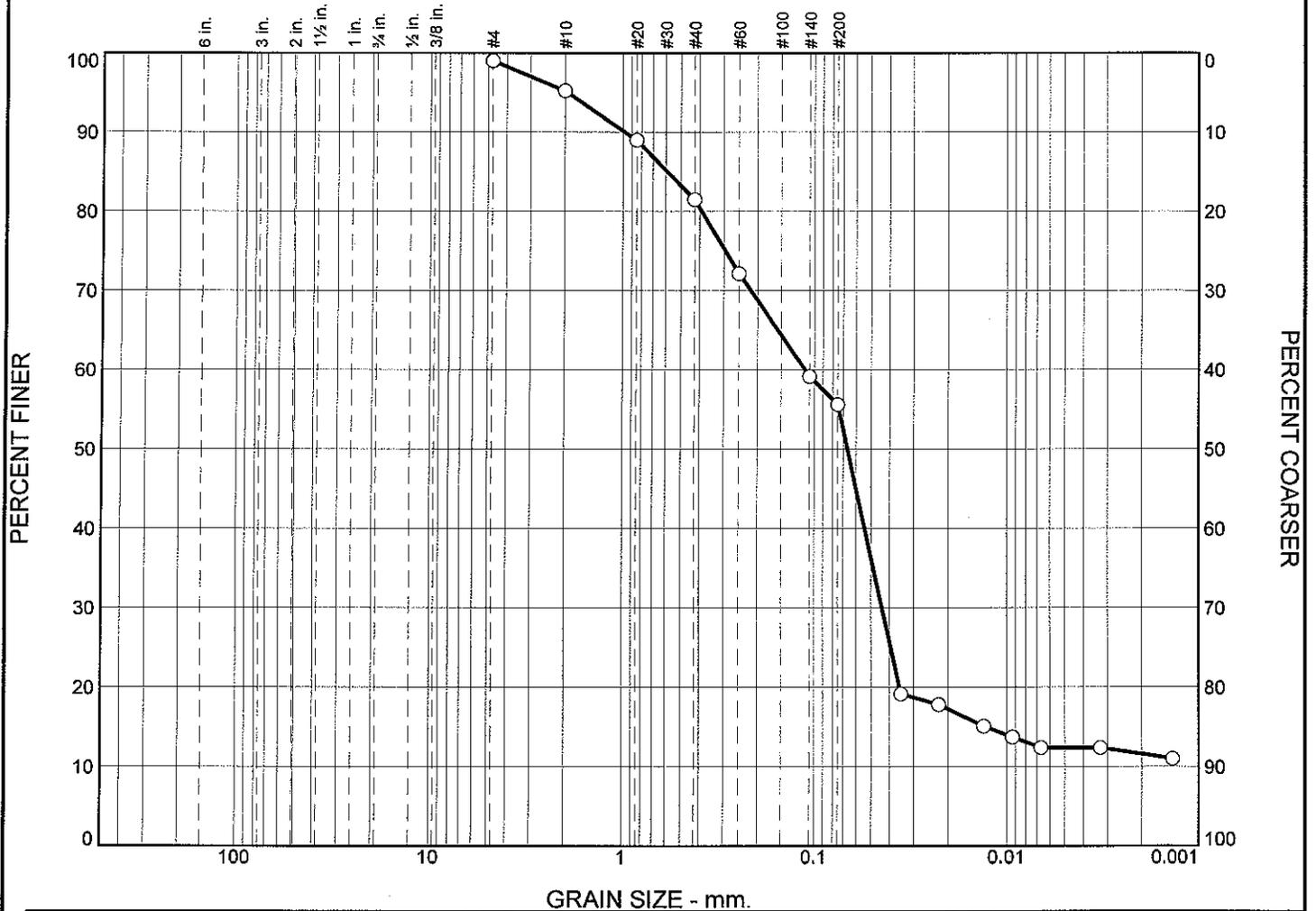
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 4.7     | 5.9  | 11.1 | 11.8 | 15.3    | 48.8  | 28.0 | 3.0  | 3.2  | 0.6     | 34.8  | 13.2 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0102          | 0.0306          | 0.0427          | 0.0652          | 0.1010          | 0.3277          | 0.4369          | 0.7594          | 1.5282          |

| Fineness Modulus |
|------------------|
| 0.78             |

Alpha Analytical

# Particle Size Distribution Report



|                                     | % Boulders | % Cobbles | % Pebbles       |                 | % Granules      | % Sand          |                 |                 |                |                | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|------|---------|--------|
|                                     |            |           |                 |                 |                 | V. Crs.         | Crs.            | Med.            | Fine           | V. Fine        | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |                 |                 | 3.1             | 5.0             | 7.0             | 11.1            | 10.5           | 14.7           | 28.1   | 2.8  | 3.0  | 0.7     | 12.3   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |      |      |         |        |
| <input type="radio"/>               |            |           | 0.5885          | 0.1121          | 0.0667          | 0.0438          | 0.0129          |                 |                |                |        |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** L0912908     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 501513     **Sample Number:** L0912908-19  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912908

Location: 501513

Sample Number: L0912908-19

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.60                       | 0.00         | #4                 | 522.38                  | 521.73               | 99.0          | 1.0              |
|                             |              | #10                | 487.22                  | 484.74               | 95.2          | 4.8              |
|                             |              | #20                | 409.47                  | 405.37               | 89.0          | 11.0             |
|                             |              | #40                | 366.58                  | 361.66               | 81.5          | 18.5             |
|                             |              | #60                | 372.27                  | 366.14               | 72.1          | 27.9             |
|                             |              | #140               | 351.31                  | 342.79               | 59.1          | 40.9             |
|                             |              | #200               | 347.52                  | 345.18               | 55.6          | 44.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 55.6

Weight of hydrometer sample = 65.60

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 19.1          | 80.9             |
| 5.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0223         | 17.8          | 82.2             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 15.1          | 84.9             |
| 30.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0094         | 13.7          | 86.3             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 12.3          | 87.7             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 12.3          | 87.7             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 11.0          | 89.0             |

## Fractional Components

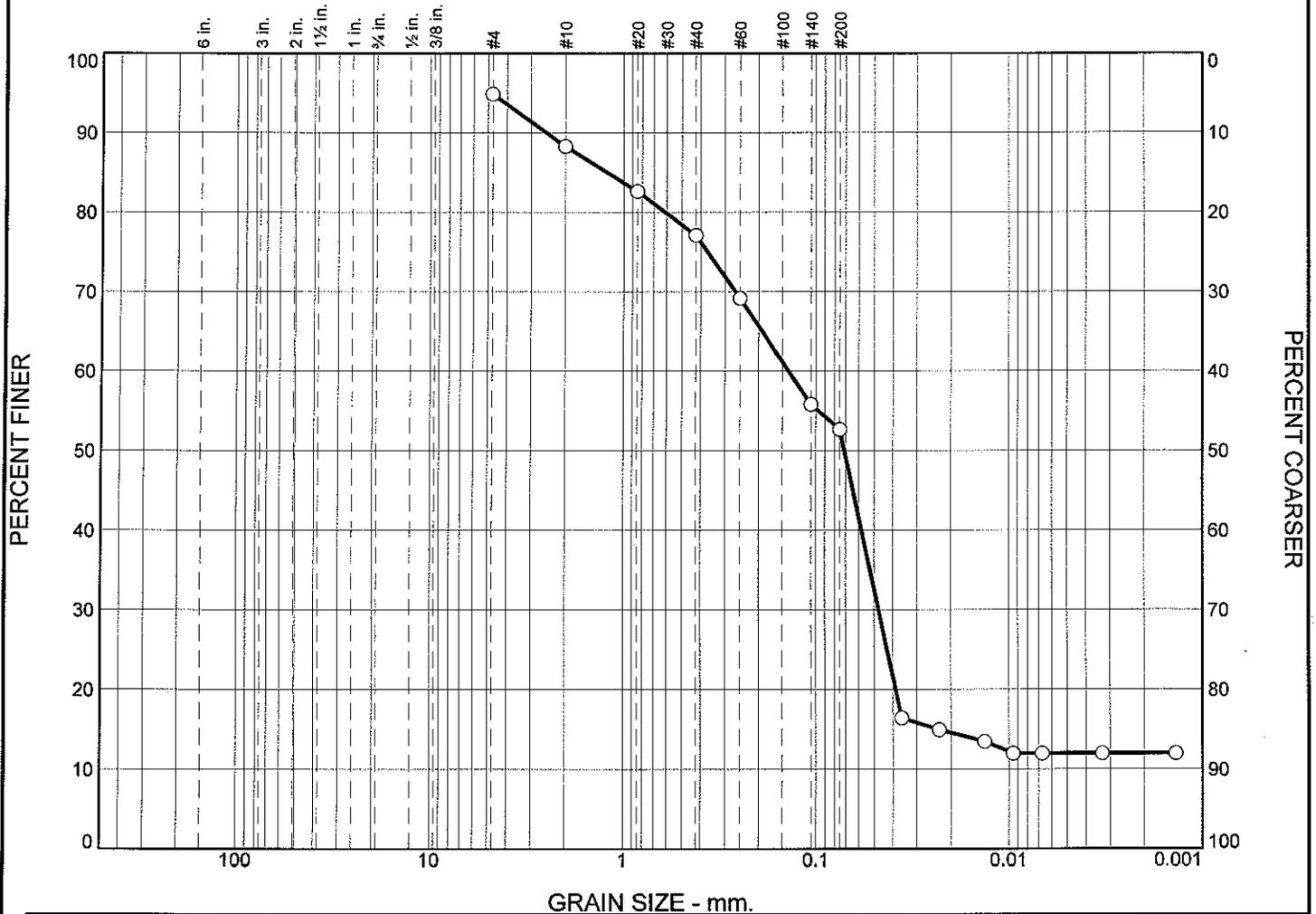
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.1      | 5.0     | 7.0  | 11.1 | 10.5 | 14.7    | 48.3  | 28.1 | 2.8  | 3.0  | 0.7     | 34.6  | 12.3 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0129 | 0.0355 | 0.0438 | 0.0667 | 0.1121 | 0.3908 | 0.5885 | 0.9776 | 1.9384 |

| Fineness Modulus |
|------------------|
| 0.89             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |          |         |                 | 5.3             | 4.6             | 5.3             | 9.3             | 10.7            | 14.7           | 27.8           | 2.0  | 1.9  | 0.0     | 12.0   |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |          |         | 1.2191          | 0.1390          | 0.0711          | 0.0473          | 0.0234          |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912908    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 ○ **Source of Sample:** 501526    **Sample Number:** L0912908-20  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912908  
 Location: 501526  
 Sample Number: L0912908-20  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 57.02                       | 0.00         | #4                 | 523.79                  | 520.86               | 94.9          | 5.1              |
|                             |              | #10                | 485.82                  | 482.06               | 88.3          | 11.7             |
|                             |              | #20                | 414.24                  | 411.02               | 82.6          | 17.4             |
|                             |              | #40                | 381.04                  | 377.89               | 77.1          | 22.9             |
|                             |              | #60                | 374.35                  | 369.81               | 69.1          | 30.9             |
|                             |              | #140               | 354.76                  | 347.15               | 55.8          | 44.2             |
|                             |              | #200               | 348.46                  | 346.66               | 52.6          | 47.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 52.6  
 Weight of hydrometer sample = 57.02  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0 | 14.2       | 0.0359         | 16.4          | 83.6             |
| 5.00                | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0 | 14.4       | 0.0229         | 14.9          | 85.1             |
| 15.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0133         | 13.4          | 86.6             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 12.0          | 88.0             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 12.0          | 88.0             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0033         | 12.0          | 88.0             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0014         | 12.0          | 88.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.3      | 4.6     | 5.3  | 9.3  | 10.7 | 14.7    | 44.6  | 27.8 | 2.0  | 1.9  | 0.0     | 31.7  | 12.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0234          | 0.0386          | 0.0473          | 0.0711          | 0.1390          | 0.6118          | 1.2191          | 2.5104          |                 |

| Fineness Modulus |
|------------------|
| 1.18             |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. NELAP Accredited.**

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A,3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D,9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

# CHAIN OF CUSTODY

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Station 125



## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: **20912908**

**Report Information Data Deliverables Billing Information**

FAX  EMAIL  Same as Client info PO #:

ADEx  Add'l Deliverables

**Regulatory Requirements/Report Limits**

State/Fed Program: fed Criteria:

| ANALYSIS                            |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|
| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
|                                | 501111    | 9/23/09    | 12:43 | SE            | HC                 |
|                                | 501112    | 9/23/09    | 12:43 | SE            | HC                 |
|                                | 501113    | 9/23/09    | 12:43 | SE            | HC                 |
|                                | 501125    | 9/23/09    | 12:50 | SE            | HC                 |
|                                | 501126    | 9/23/09    | 12:50 | SE            | HC                 |
|                                | 501127    | 9/23/09    | 12:50 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                                       |               |                      |               |
|---------------------------------------|---------------|----------------------|---------------|
| Relinquished By:                      | Date/Time     | Received By:         | Date/Time     |
| <i>Heidi Van...<br/>Paul Schubert</i> | 9-23-09 10:10 | <i>Paul Schubert</i> | 9/23/09       |
|                                       | 9/24/09 9:00  | <i>Paul Schubert</i> | 9/24/09 9:20  |
|                                       | 9/24/09 11:00 | <i>Paul Schubert</i> | 9/24/09 11:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

02021016:35

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Station 128



# CHAIN OF CUSTODY

PAGE 2 OF 12

02021016:35

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3286

### Client Information

Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 E. Falmouth, MA 02536  
 Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

### Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:                      Time:

|   |   |
|---|---|
| Date Rec'd in Lab:                                      | ALPHA Job #: 20912908                       |
| <b>Report Information</b>                               | <b>Data Deliverables</b>                    |
| <input type="checkbox"/> FAX                            | <input checked="" type="checkbox"/> EMAIL   |
| <input checked="" type="checkbox"/> ADEx                | <input type="checkbox"/> Add'l Deliverables |
| <b>Billing Information</b>                              |   |
| <input checked="" type="checkbox"/> Same as Client info | PO #:                                       |
| <b>Regulatory Requirements/Report Limits</b>            |   |
| State/Fed Program                                       | Criteria                                    |
| fed   |   |

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch   | 1               |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem lab QC  | 1               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 501311    | 9/23/09    | 10:05 | SE            | HC                 |
| 10                             | 501312    | 9/23/09    | 10:05 | SE            | HC                 |
| 11                             | 501313    | 9/23/09    | 10:05 | SE            | HC                 |
|                                | 501325    | 9/23/09    | 10:11 | SE            | HC                 |
| 12                             | 501326    | 9/23/09    | 10:11 | SE            | HC                 |
|                                | 501327    | 9/23/09    | 10:11 | SE            | HC                 |
|                                | 501345    | 9/23/09    | 10:30 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                        |               |                      |               |
|------------------------|---------------|----------------------|---------------|
| Relinquished By:       | Date/Time     | Received By:         | Date/Time     |
| <i>Herb... Weishar</i> | 9/23/09 18:41 | <i>Fallyn...</i>     | 9/23/09 18:53 |
| <i>Paul Dillbert</i>   | 9/24/09 9:00  | <i>Paul Dillbert</i> | 9/24/09 9:20  |
| <i>Paul Dillbert</i>   | 9/24/09 11:00 | <i>...</i>           | 9/24/09 11:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

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# CHAIN OF CUSTODY

PAGE OF

Date Rec'd In Lab:

ALPHA Job #: **20912908**

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA, 18        | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 13                             | 501411    | 9/22/09    | 09:00 | SE            | DB                 |
| 14                             | 501412    | 9/22/09    | 09:00 | SE            | DB                 |
| 15                             | 501413    | 9/22/09    | 09:00 | SE            | DB                 |
|                                | 501425    | 9/22/09    | 09:25 | SE            | HC                 |
| 16                             | 501426    | 9/22/09    | 09:25 | SE            | HC                 |
|                                | 501427    | 9/22/09    | 09:25 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                              |               |                              |               |
|------------------------------|---------------|------------------------------|---------------|
| Relinquished By:             | Date/Time     | Received By:                 | Date/Time     |
| <i>Handwritten Signature</i> | 9/22/09 18:56 | <i>Handwritten Signature</i> | 9/22/09 18:55 |
| <i>Handwritten Signature</i> | 9/23/09 09:15 | <i>Handwritten Signature</i> | 9/22/09 9:15  |
| <i>Handwritten Signature</i> | 9/23/09 18:25 | <i>Handwritten Signature</i> | 9/23/09 16:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

02021016:35

Station 131

# CHAIN OF CUSTODY

PAGE 1 OF 12

02021016:35



Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

### Client Information

Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 E. Falmouth, MA 02536  
 Phone: 508-540-8080  
 Fax: 508-540-1001  
 Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

### Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Date Rec'd in Lab:

ALPHA Job #: 20912908

### Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

### Billing Information

Same as Client info    PO #:

### Regulatory Requirements/Report Limits

State/Fed Program: fed  
 Criteria:

### ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
**Filtration**  
 Done  
 Not Needed  
 Lab to do  
**Preservation**  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 17                             | 501511    | 9/23/09    | 08:46 | SE            | HC                 |
| 18                             | 501512    | 9/23/09    | 08:46 | SE            | HC                 |
| 19                             | 501513    | 9/23/09    | 08:46 | SE            | HC                 |
|                                | 501525    | 9/23/09    | 08:50 | SE            | HC                 |
| 20                             | 501526    | 9/23/09    | 08:50 | SE            | HC                 |
|                                | 501527    | 9/23/09    | 08:52 | SE            | HC                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>[Signature]</i> | 9/23/09 18:40 | <i>[Signature]</i> | 9/23/09 18:50 |
| <i>[Signature]</i> | 9/24/09 9:00  | <i>[Signature]</i> | 9/24/09 9:20  |
| <i>[Signature]</i> | 9/24/09 11:00 | <i>[Signature]</i> | 9/24/09 11:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912909  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Phone:          | (508) 540-8080  |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 08/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

---

320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912909-01                | 501611           | NEW BEDFORD, MA            | 09/23/09 16:00                  |
| L0912909-02                | 501612           | NEW BEDFORD, MA            | 09/23/09 16:00                  |
| L0912909-03                | 501613           | NEW BEDFORD, MA            | 09/23/09 16:00                  |
| L0912909-04                | 501626           | NEW BEDFORD, MA            | 09/23/09 16:09                  |
| L0912909-05                | 501711           | NEW BEDFORD, MA            | 09/23/09 14:00                  |
| L0912909-06                | 501712           | NEW BEDFORD, MA            | 09/23/09 14:00                  |
| L0912909-07                | 501713           | NEW BEDFORD, MA            | 09/23/09 14:00                  |
| L0912909-08                | 501726           | NEW BEDFORD, MA            | 09/23/09 14:12                  |
| L0912909-09                | 501811           | NEW BEDFORD, MA            | 09/22/09 10:30                  |
| L0912909-10                | 501812           | NEW BEDFORD, MA            | 09/22/09 10:30                  |
| L0912909-11                | 501813           | NEW BEDFORD, MA            | 09/22/09 10:30                  |
| L0912909-12                | 501826           | NEW BEDFORD, MA            | 09/22/09 10:30                  |
| L0912909-13                | 501911           | NEW BEDFORD, MA            | 09/24/09 09:10                  |
| L0912909-14                | 501912           | NEW BEDFORD, MA            | 09/24/09 09:10                  |
| L0912909-15                | 501913           | NEW BEDFORD, MA            | 09/24/09 09:10                  |
| L0912909-16                | 501926           | NEW BEDFORD, MA            | 09/24/09 09:14                  |
| L0912909-17                | 502011           | NEW BEDFORD, MA            | 09/24/09 16:52                  |
| L0912909-18                | 502012           | NEW BEDFORD, MA            | 09/24/09 16:52                  |
| L0912909-19                | 502013           | NEW BEDFORD, MA            | 09/24/09 16:52                  |
| L0912909-20                | 502026           | NEW BEDFORD, MA            | 09/24/09 16:56                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

---

### Report Submission

This report replaces the original report issued on February 2, 2010. The report was ammended to include revised Grain Size data.

The WG381751-1 Laboratory Duplicate RPD is outside the acceptance criteria for gravel (200%),% very coarse sand (68%), clay (26%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Case Narrative (continued)**

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Peter Henriksen

Title: Technical Director/Representative

Date: 08/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-01  
**Client ID:** 501611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 12.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 14.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912909-02  
**Client ID:** 501612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.500  |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 33.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 18.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-03  
**Client ID:** 501613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 9.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 27.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-04  
**Client ID:** 501626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:09  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.50   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 36.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912909-05  
**Client ID:** 501711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 14:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 24.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-06  
**Client ID:** 501712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 14:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 11.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 19.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 2.20   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.700  |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-07  
**Client ID:** 501713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 14:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 19.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 22.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-08  
**Client ID:** 501726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 14:12  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 9.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 27.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 3.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912909-09  
**Client ID:** 501811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 10:30  
**Date Received:** 09/22/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-10  
**Client ID:** 501812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 10:30  
**Date Received:** 09/22/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 12.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 26.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-11  
**Client ID:** 501813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 10:30  
**Date Received:** 09/22/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 46.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-12  
**Client ID:** 501826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 10:30  
**Date Received:** 09/22/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.50   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 40.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912909-13  
**Client ID:** 501911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 09:10  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.50   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 14.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-14  
**Client ID:** 501912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 09:10  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 12.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 25.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 10.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912909-15  
**Client ID:** 501913  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 09:10  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 12.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 26.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-16  
**Client ID:** 501926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 09:14  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 11.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 25.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 10.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-17  
**Client ID:** 502011  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 16:52  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 10.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 27.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-18  
**Client ID:** 502012  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 16:52  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 20.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-19  
**Client ID:** 502013  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 16:52  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 11.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 23.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912909-20  
**Client ID:** 502026  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 16:56  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.20   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 14.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 21.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 9.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912909

Report Date: 08/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG381751-1 QC Sample: L0912909-12 Client ID: 501826 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | ND            | 0.400            | %     | NC  | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 3.3           | 6.70             | %     | 68  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 8.1           | 9.50             | %     | 16  |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 7.9           | 7.30             | %     | 8   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 6.5           | 5.50             | %     | 17  |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 12.2          | 12.6             | %     | 3   |      | 20         |
| Silt - (1.95-62.5 um)  | 40.3          | 41.2             | %     | 2   |      | 20         |
| Clay - (<1.95 um)  | 21.7          | 16.7             | %     | 26  | Q    | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912909

Project Number: TO-0018

Report Date: 08/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

## Cooler Information Custody Seal

## Cooler

|   |        |
|---|--------|
| D | Absent |
| C | Absent |
| E | Absent |
| B | Absent |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-01A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-02A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-03A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-04A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-05A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-06A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-07A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-08A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-09A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-10A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-11A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-12A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-13A | Glass 250ml unpreserved | D      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912909

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-14A | Glass 250ml unpreserved | D      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-15A | Glass 250ml unpreserved | D      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-16A | Glass 250ml unpreserved | D      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-17A | Glass 250ml unpreserved | D      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912909

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912909-18A | Glass 250ml unpreserved | D      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912909-19A | Glass 250ml unpreserved | D      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

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Report Date: 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp<br>deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|---------------|------|--------|---|
| L0912909-20A | Glass 250ml unpreserved | D      | N/A | 2.1           | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912909  
**Report Date:** 08/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NI** - Not Ignitable.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.

Report Format: Data Usability Report



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*Data Qualifiers*

**RE** - Analytical results are from sample re-extraction.

**J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

**ND** - Not detected at the reporting limit (RL) for the sample.

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## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# ASTM D422-63

## Wet Sieve Hydrometer



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 501611

Sample Number: L0912909-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 31.74  
 Tare Wt. = 4.14  
 Minus #200 from wash = 30.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 39.90                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 485.55                  | 484.84               | 98.2          | 1.8              |
|                             |              | #20                | 411.54                  | 405.52               | 83.1          | 16.9             |
|                             |              | #40                | 365.16                  | 359.28               | 68.4          | 31.6             |
|                             |              | #60                | 369.34                  | 366.26               | 60.7          | 39.3             |
|                             |              | #140               | 347.23                  | 342.93               | 49.9          | 50.1             |
|                             |              | #200               | 347.27                  | 345.32               | 45.0          | 55.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 45.0

Weight of hydrometer sample = 39.90

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 20.3          | 79.7             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 16.7          | 83.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 16.7          | 83.3             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 14.9          | 85.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 14.9          | 85.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 14.9          | 85.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 13.1          | 86.9             |

## Fractional Components

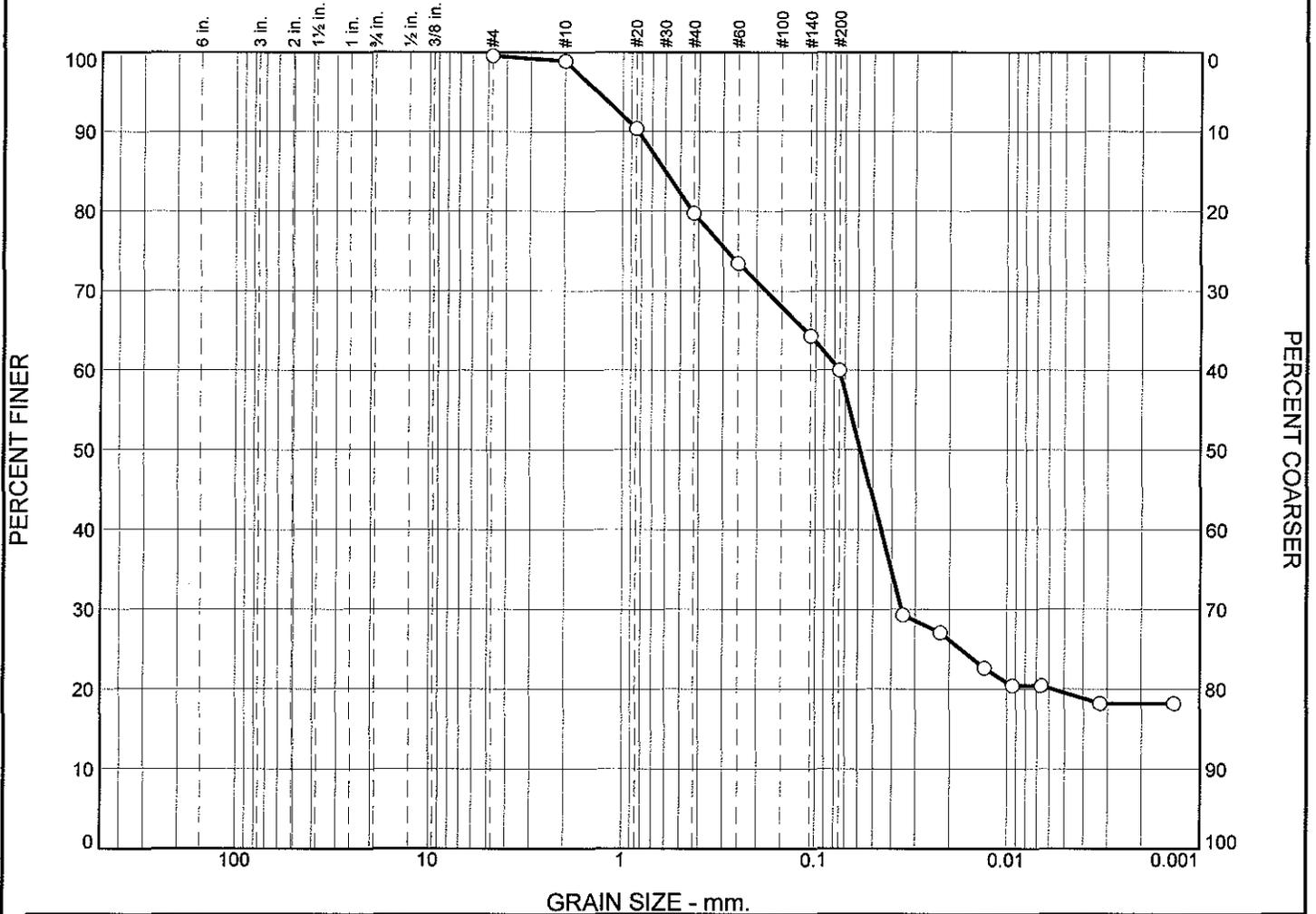
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.4     | 1.4      | 12.2    | 14.1 | 11.2 | 8.7  | 13.0    | 59.2  | 19.8 | 2.5  | 1.8  | 0.0     | 24.1  | 14.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0096          | 0.0341          | 0.0476          | 0.1068          | 0.2369          | 0.7335          | 0.9449          | 1.2548          | 1.6661          |

| Fineness Modulus |
|------------------|
| 1.19             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 | % Silt  |                 |      |                 | % Clay |                |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|--------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |        | V. Fine        |  |                |
| ○ |          |   |         |   |                 |   | 0.5             | 6.9     | 9.8             | 8.8  | 7.3             | 13.4    | 24.0            | 4.6  | 3.7             | 1.6    | 18.8           |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.5985          |   | 0.0750          |         | 0.0584          |      | 0.0354          |         |                 |      |                 |        |                |  |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501612    <b>Sample Number:</b> L0912909-02</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501612  
 Sample Number: L0912909-02  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 26.25  
 Tare Wt. = 4.11  
 Minus #200 from wash = 49.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.49                       | 0.00         | #4                 | 521.14                  | 520.95               | 99.6          | 0.4              |
|                             |              | #10                | 482.45                  | 482.16               | 98.9          | 1.1              |
|                             |              | #20                | 414.91                  | 411.21               | 90.4          | 9.6              |
|                             |              | #40                | 382.55                  | 377.92               | 79.7          | 20.3             |
|                             |              | #60                | 372.76                  | 370.01               | 73.4          | 26.6             |
|                             |              | #140               | 351.28                  | 347.33               | 64.3          | 35.7             |
|                             |              | #200               | 348.46                  | 346.58               | 60.0          | 40.0             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 60.0  
 Weight of hydrometer sample = 43.49  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 29.3          | 70.7             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 27.1          | 72.9             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 22.6          | 77.4             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 20.4          | 79.6             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 20.4          | 79.6             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 18.2          | 81.8             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 18.2          | 81.8             |

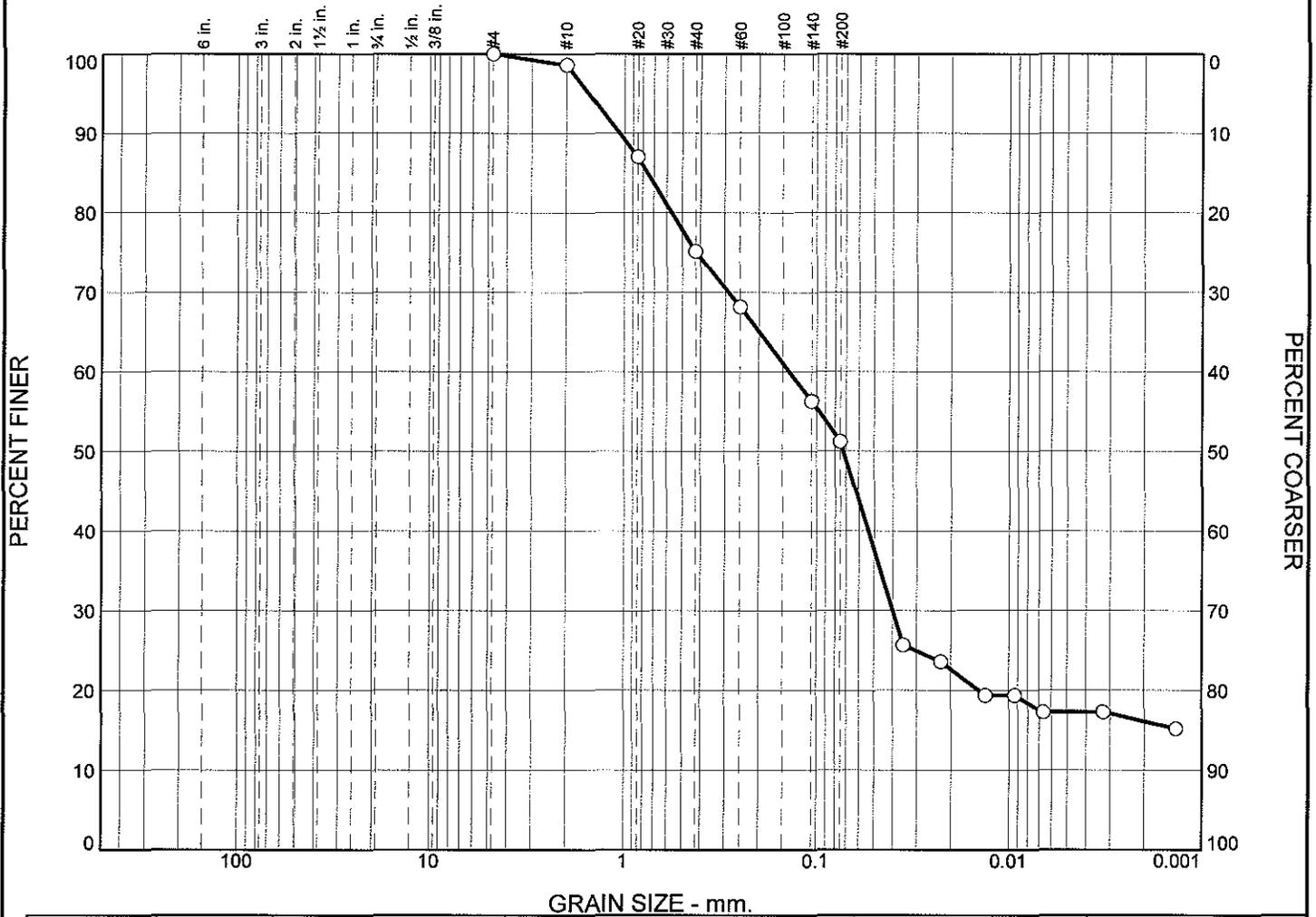
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.5      | 6.9     | 9.8  | 8.8  | 7.3  | 13.4    | 46.2  | 24.0 | 4.6  | 3.7  | 1.6     | 33.9  | 18.8 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0058 | 0.0354 | 0.0584 | 0.0750 | 0.4322 | 0.5985 | 0.8288 | 1.3516 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.79                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                       | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|-----------------------|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|                       |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/> | 0.0        | 0.0       | 0.3       | 1.1        | 9.4     | 11.3 | 9.7  | 9.6  | 13.5    | 20.0   | 4.4  | 2.4  | 1.0     | 17.3   |

| <input checked="" type="checkbox"/> | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|-------------------------------------|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| <input type="radio"/>               |    |    | 0.7556          | 0.1384          | 0.0723          | 0.0399          |                 |                 |                |                |

|                       | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 501613    <b>Sample Number:</b> L0912909-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 501613

Sample Number: L0912909-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 26.64  
 Tare Wt. = 4.08  
 Minus #200 from wash = 42.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 39.13                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 485.39                  | 484.84               | 98.6          | 1.4              |
|                             |              | #20                | 410.05                  | 405.52               | 87.0          | 13.0             |
|                             |              | #40                | 363.93                  | 359.28               | 75.1          | 24.9             |
|                             |              | #60                | 368.99                  | 366.26               | 68.2          | 31.8             |
|                             |              | #140               | 347.56                  | 342.93               | 56.3          | 43.7             |
|                             |              | #200               | 347.31                  | 345.32               | 51.2          | 48.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 51.2

Weight of hydrometer sample = 39.13

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 25.7          | 74.3             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 23.6          | 76.4             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 19.4          | 80.6             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 19.4          | 80.6             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 17.3          | 82.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 17.3          | 82.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 15.2          | 84.8             |

## Fractional Components

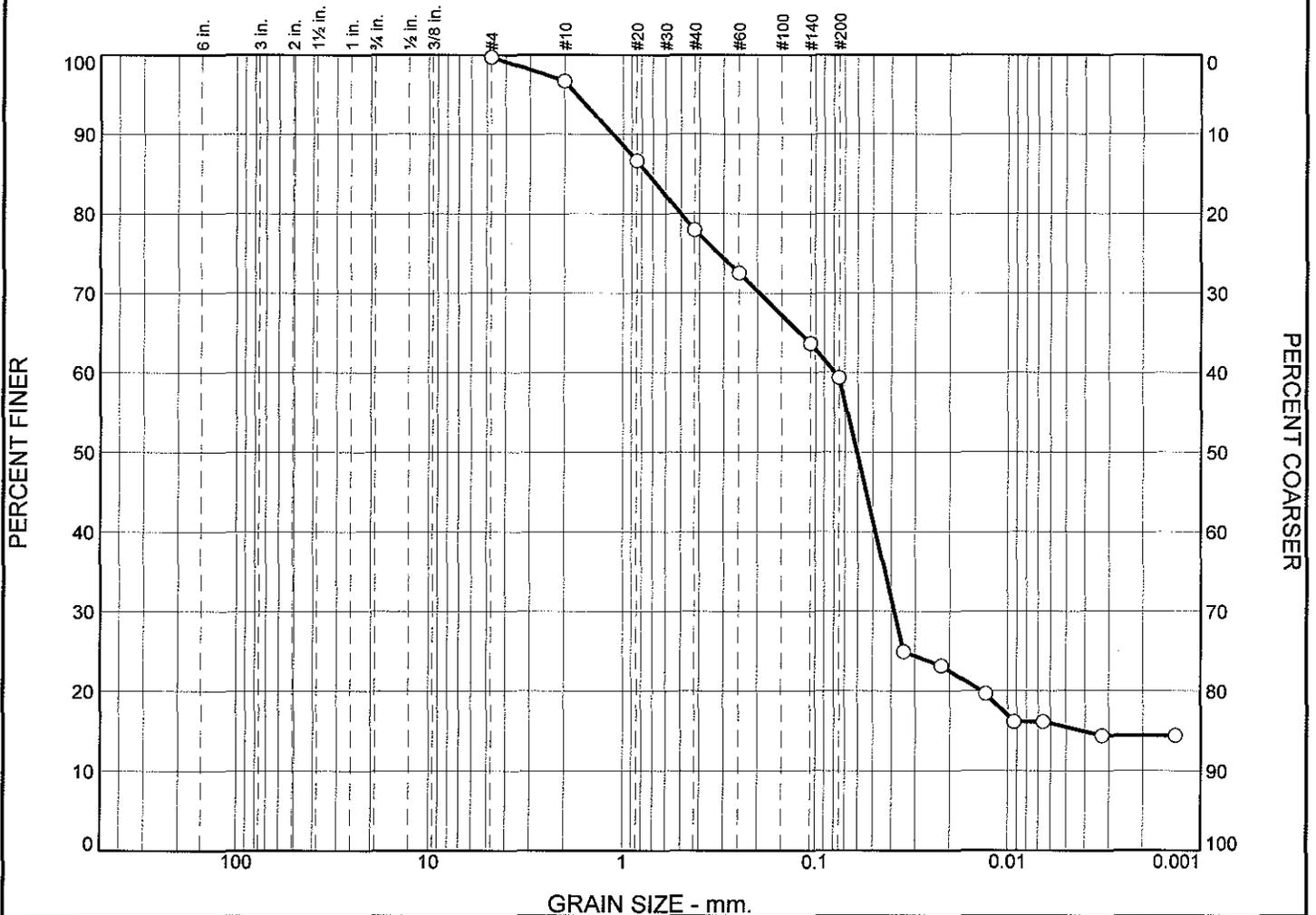
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.3     | 1.1      | 9.4     | 11.3 | 9.7  | 9.6  | 13.5    | 53.5  | 20.0 | 4.4  | 2.4  | 1.0     | 27.8  | 17.3 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0143 | 0.0399 | 0.0723 | 0.1384 | 0.5645 | 0.7556 | 1.0596 | 1.5334 |

| Fineness Modulus |
|------------------|
| 0.97             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 2.4      | 8.1     | 8.6  | 7.5  | 7.1  | 14.1    | 26.8 | 3.6  | 4.7  | 1.4     | 14.8 |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10 | Cc | Cu |
|----|----|--------|--------|--------|--------|--------|-----|----|----|
| ○  |    | 0.7435 | 0.0790 | 0.0607 | 0.0386 | 0.0042 |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912909 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 501626 <b>Sample Number:</b> L0912909-04 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912909  
**Location:** 501626  
**Sample Number:** L0912909-04  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 30.58  
 Tare Wt. = 4.05  
 Minus #200 from wash = 51.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 54.37                       | 0.00         | #4                 | 521.09                  | 520.95               | 99.7          | 0.3              |
|                             |              | #10                | 483.82                  | 482.16               | 96.7          | 3.3              |
|                             |              | #20                | 416.65                  | 411.21               | 86.7          | 13.3             |
|                             |              | #40                | 382.66                  | 377.92               | 78.0          | 22.0             |
|                             |              | #60                | 372.96                  | 370.01               | 72.5          | 27.5             |
|                             |              | #140               | 352.16                  | 347.33               | 63.7          | 36.3             |
|                             |              | #200               | 348.92                  | 346.58               | 59.4          | 40.6             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 59.4  
 Weight of hydrometer sample = 54.37  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 24.9          | 75.1             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 23.2          | 76.8             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 19.7          | 80.3             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 16.2          | 83.8             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 16.2          | 83.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 14.4          | 85.6             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 14.4          | 85.6             |

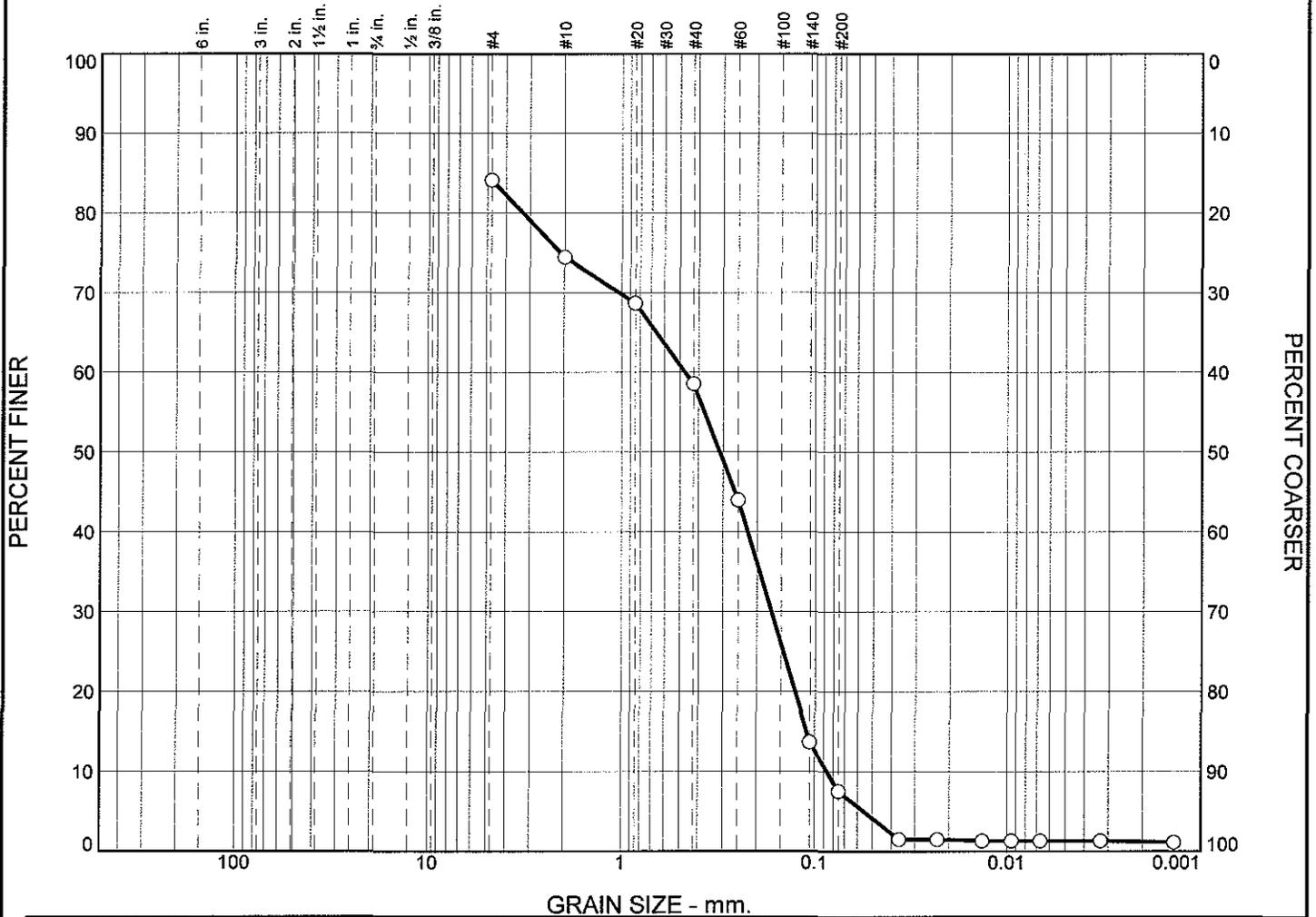
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.4      | 8.1     | 8.6  | 7.5  | 7.1  | 14.1    | 45.4  | 26.8 | 3.6  | 4.7  | 1.4     | 36.5  | 14.8 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0042          | 0.0136          | 0.0386          | 0.0607          | 0.0790          | 0.4996          | 0.7435          | 1.1287          | 1.7310          |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.89                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | % Sand  |        |        |        | % Silt  |      |      |      | % Clay |         |
|---|----------|---------|---------|----------|---------|--------|--------|--------|---------|------|------|------|--------|---------|
|   |          |         |         |          | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○ |          |         |         | 7.7      | 4.7     | 8.9    | 16.9   | 24.5   | 13.5    | 4.5  | 0.1  | 0.1  | 0.0    | 1.3     |
| × | LL       | PL      | D85     | D60      | D50     | D30    | D15    | D10    | Cc      | Cu   |      |      |        |         |
| ○ |          |         |         | 0.4694   | 0.3113  | 0.1683 | 0.1101 | 0.0863 | 0.70    | 5.44 |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |   |
|--|---|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501711    <b>Sample Number:</b> L0912909-05</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p> <p style="text-align: center;"><b>Figure</b></p> |
|--|---|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 501711

Sample Number: L0912909-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 65.13  
 Tare Wt. = 4.05  
 Minus #200 from wash = 6.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.59                       | 0.00         | #4                 | 532.28                  | 521.88               | 84.1          | 15.9             |
|                             |              | #10                | 491.19                  | 484.84               | 74.5          | 25.5             |
|                             |              | #20                | 409.31                  | 405.52               | 68.7          | 31.3             |
|                             |              | #40                | 365.93                  | 359.28               | 58.5          | 41.5             |
|                             |              | #60                | 375.81                  | 366.26               | 44.0          | 56.0             |
|                             |              | #140               | 362.82                  | 342.93               | 13.7          | 86.3             |
|                             |              | #200               | 349.36                  | 345.32               | 7.5           | 92.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 7.5

Weight of hydrometer sample = 65.59

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 1.5           | 98.5             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.5           | 98.5             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 1.3           | 98.7             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 1.3           | 98.7             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.3           | 98.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.3           | 98.7             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 1.1           | 98.9             |

## Fractional Components

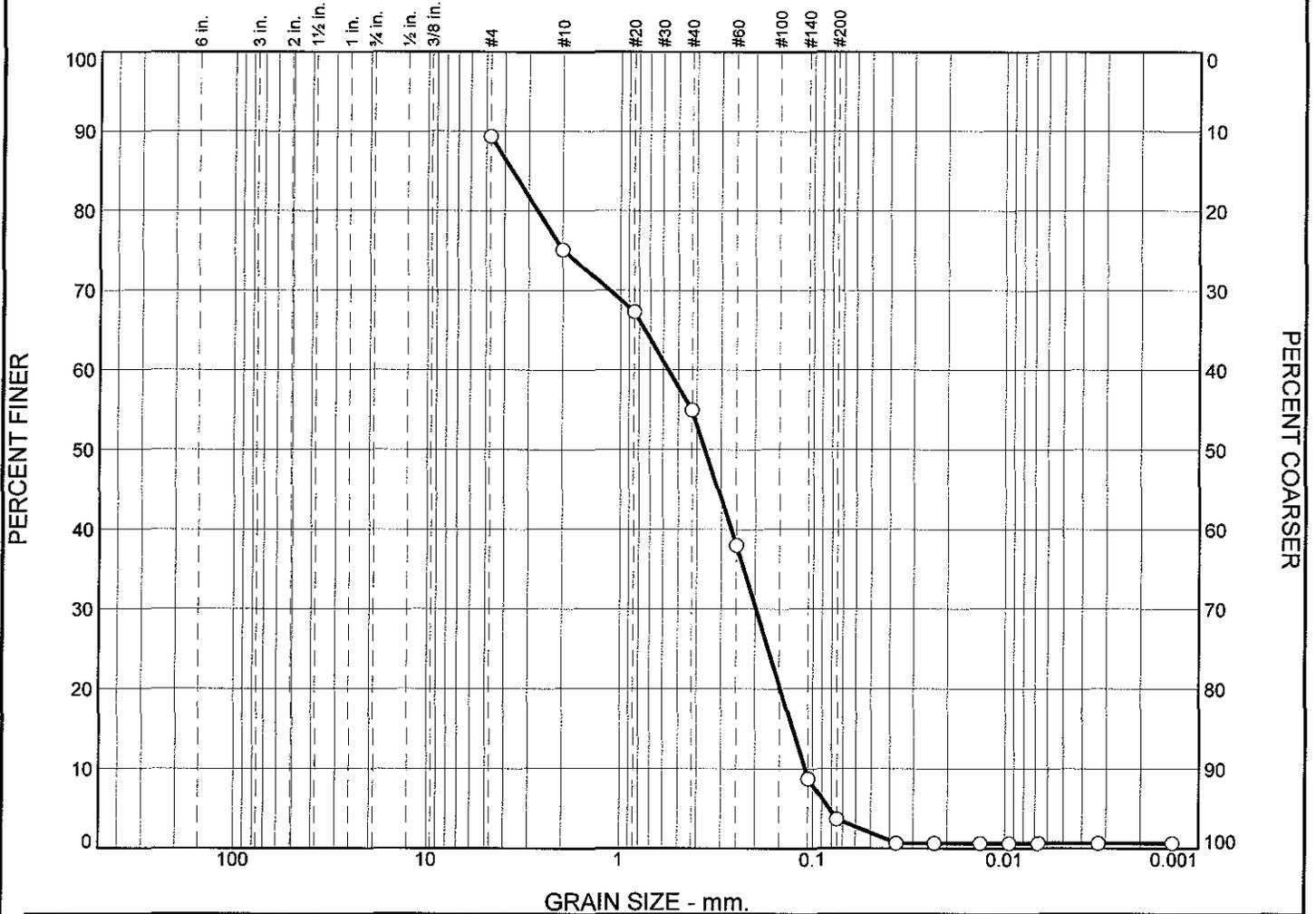
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.7      | 4.7     | 8.9  | 16.9 | 24.5 | 13.5    | 68.5  | 4.5  | 0.1  | 0.1  | 0.0     | 4.7   | 1.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0863          | 0.1101          | 0.1268          | 0.1683          | 0.3113          | 0.4694          | 3.2802          |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.30             | 5.44           | 0.70           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| %                                   | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |        |      |        | % Silt  |        |      |        | % Clay |         |  |      |
|-------------------------------------|----------|---|---------|---|---------|---|----------|---------|--------|------|--------|---------|--------|------|--------|--------|---------|--|------|
|                                     |          |   |         |   |         |   |          | V. Crs. | Crs.   | Med. | Fine   | V. Fine | Crs.   | Med. | Fine   |        | V. Fine |  |      |
| <input type="checkbox"/>            |          |   |         |   |         |   | 11.4     | 6.3     | 10.9   | 19.9 | 23.6   | 11.5    | 2.2    | 0.0  | 0.0    | 0.0    | 0.7     |  |      |
| <input checked="" type="checkbox"/> | LL       |   | PL      |   | D85     |   | D60      |         | D50    |      | D30    |         | D15    |      | D10    |        | Cc      |  | Cu   |
| <input type="checkbox"/>            |          |   |         |   | 3.6463  |   | 0.5639   |         | 0.3638 |      | 0.1977 |         | 0.1274 |      | 0.1100 |        | 0.63    |  | 5.13 |

| Material Description     | USCS | AASHTO |
|--------------------------|------|--------|
| <input type="checkbox"/> | SP   |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="checkbox"/> <b>Source of Sample:</b> 501712    <b>Sample Number:</b> L0912909-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501712  
 Sample Number: L0912909-06  
 USCS Classification: SP  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 64.63  
 Tare Wt. = 4.08  
 Minus #200 from wash = 3.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.60                       | 0.00         | #4                 | 527.61                  | 520.95               | 89.4          | 10.6             |
|                             |              | #10                | 491.09                  | 482.16               | 75.1          | 24.9             |
|                             |              | #20                | 416.09                  | 411.21               | 67.3          | 32.7             |
|                             |              | #40                | 385.64                  | 377.92               | 55.0          | 45.0             |
|                             |              | #60                | 380.63                  | 370.01               | 38.0          | 62.0             |
|                             |              | #140               | 365.65                  | 347.33               | 8.7           | 91.3             |
|                             |              | #200               | 349.75                  | 346.58               | 3.7           | 96.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 3.7  
 Weight of hydrometer sample = 62.60  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 0.7           | 99.3             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.7           | 99.3             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.7           | 99.3             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.7           | 99.3             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.7           | 99.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.7           | 99.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.7           | 99.3             |

## Fractional Components

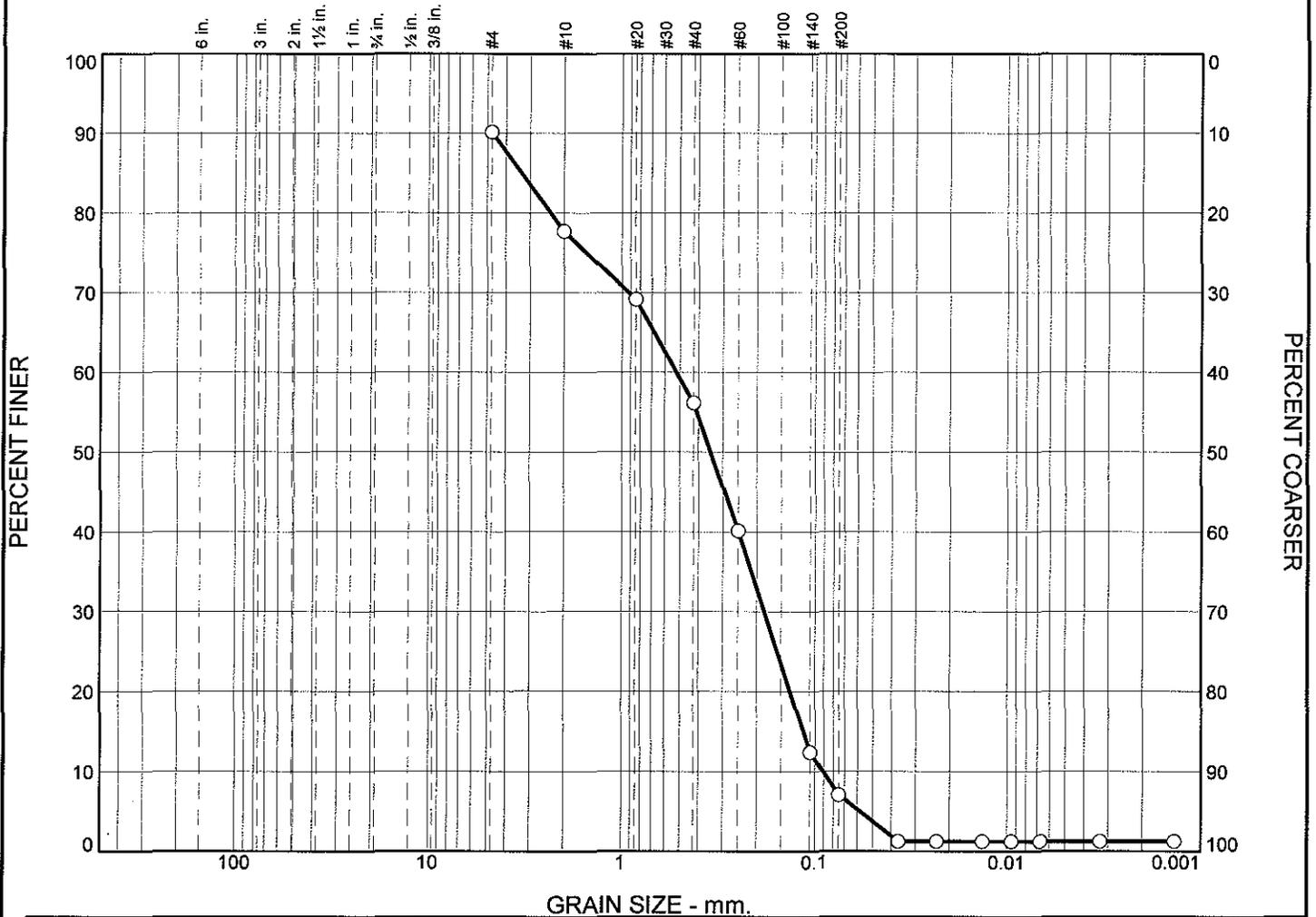
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 11.4     | 6.3     | 10.9 | 19.9 | 23.6 | 11.5    | 72.2  | 2.2  | 0.0  | 0.0  | 0.0     | 2.2   | 0.7  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1100          | 0.1274          | 0.1475          | 0.1977          | 0.3638          | 0.5639          | 2.6926          | 3.6463          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.37             | 5.13           | 0.63           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 10.0     | 6.9     | 11.6 | 19.1 | 22.4 | 12.1    | 4.3  | 0.0  | 0.0  |         | 1.3  |

| × | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 3.3181          | 0.5215          | 0.3466          | 0.1828          | 0.1149          | 0.0908          | 0.71           | 5.75           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501713    <b>Sample Number:</b> L0912909-07</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 501713

Sample Number: L0912909-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 64.90  
 Tare Wt. = 4.05  
 Minus #200 from wash = 6.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.13                       | 0.00         | #4                 | 528.29                  | 521.88               | 90.2          | 9.8              |
|                             |              | #10                | 492.94                  | 484.84               | 77.7          | 22.3             |
|                             |              | #20                | 411.10                  | 405.52               | 69.2          | 30.8             |
|                             |              | #40                | 367.74                  | 359.28               | 56.2          | 43.8             |
|                             |              | #60                | 376.71                  | 366.26               | 40.1          | 59.9             |
|                             |              | #140               | 360.99                  | 342.93               | 12.4          | 87.6             |
|                             |              | #200               | 348.79                  | 345.32               | 7.1           | 92.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 7.1

Weight of hydrometer sample = 65.13

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 1.3           | 98.7             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 1.3           | 98.7             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 1.3           | 98.7             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 1.3           | 98.7             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.3           | 98.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.3           | 98.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.3           | 98.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 10.0     | 6.9     | 11.6 | 19.1 | 22.4 | 12.1    | 72.1  | 4.3  | 0.0  | 0.0  |         | 4.3  | 1.3   |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 0.0908 | 0.1149 | 0.1341 | 0.1828 | 0.3466 | 0.5215 | 2.3434 | 3.3181 | 4.6980 |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.25             | 5.75           | 0.71           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501726  
 Sample Number: L0912909-08  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 68.48  
 Tare Wt. = 4.08  
 Minus #200 from wash = 5.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.16                       | 0.00         | #4                 | 528.19                  | 520.95               | 89.4          | 10.6             |
|                             |              | #10                | 489.84                  | 482.16               | 78.1          | 21.9             |
|                             |              | #20                | 415.54                  | 411.21               | 71.8          | 28.2             |
|                             |              | #40                | 385.08                  | 377.92               | 61.3          | 38.7             |
|                             |              | #60                | 380.50                  | 370.01               | 45.9          | 54.1             |
|                             |              | #140               | 370.07                  | 347.33               | 12.5          | 87.5             |
|                             |              | #200               | 350.88                  | 346.58               | 6.2           | 93.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 6.2  
 Weight of hydrometer sample = 68.16  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 1.1           | 98.9             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 1.1           | 98.9             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 1.1           | 98.9             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 1.1           | 98.9             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.1           | 98.9             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.1           | 98.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.1           | 98.9             |

## Fractional Components

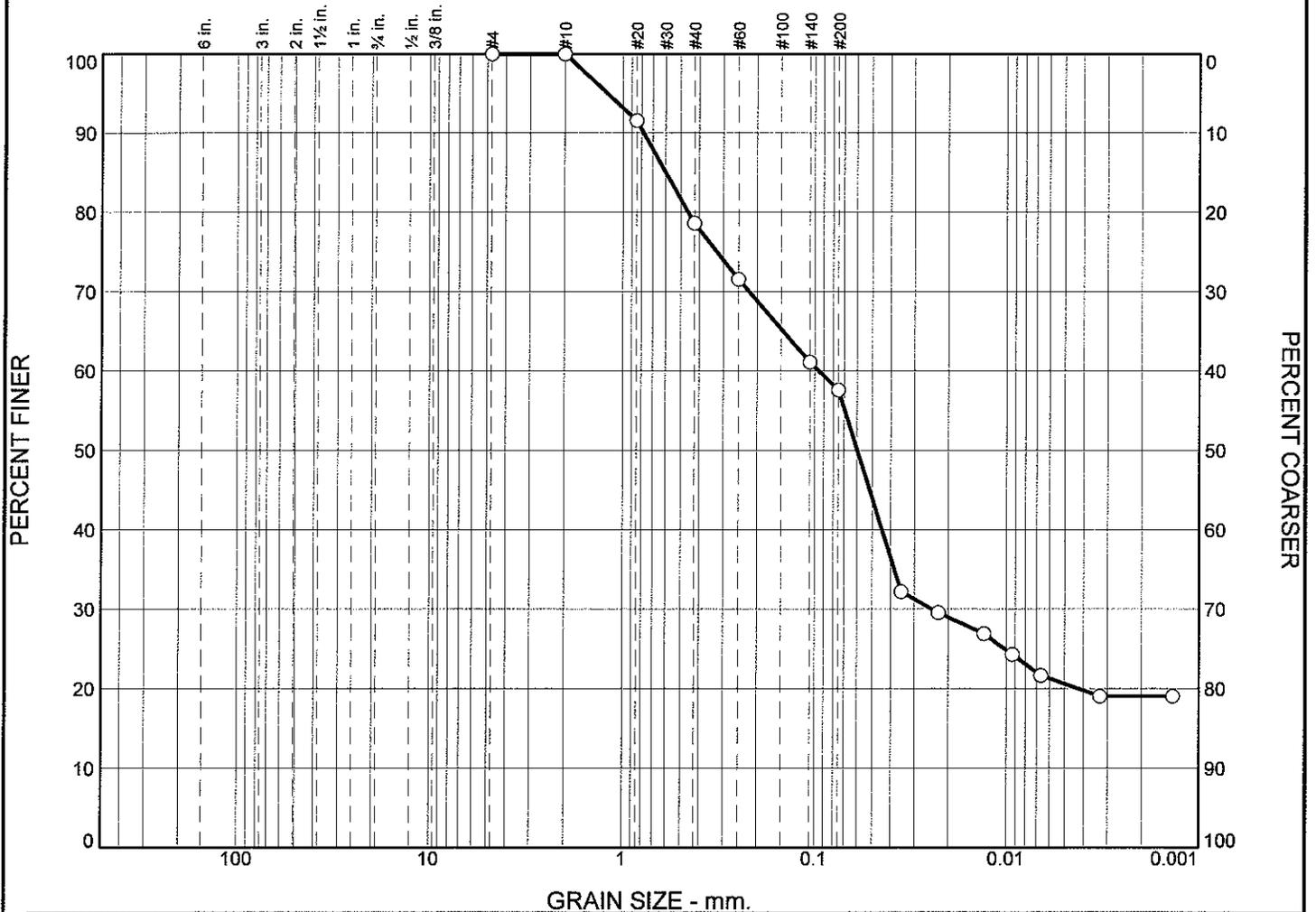
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 9.0      | 5.1     | 9.3  | 17.8 | 27.0 | 14.0    | 73.2  | 3.8  | 0.0  | 0.0  | 0.0     | 3.8   | 1.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0924          | 0.1130          | 0.1286          | 0.1663          | 0.2883          | 0.4070          | 2.3122          | 3.3942          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.13             | 4.40           | 0.73           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0             | 0.0             | 6.8             | 11.5            | 10.2            | 8.4             | 11.6           | 20.1           | 3.6  | 4.9  | 3.3     | 19.6   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.5978          | 0.0953          | 0.0598          | 0.0243          |                 |                 |                |                |      |      |         |        |

|   | USCS | AASHTO |
|---|------|--------|
| ○ |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 501811    <b>Sample Number:</b> L0912909-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 501811

Sample Number: L0912909-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.51  
 Tare Wt. = 4.11  
 Minus #200 from wash = 44.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 35.10                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 408.48                  | 405.52               | 91.6          | 8.4              |
|                             |              | #40                | 363.82                  | 359.28               | 78.6          | 21.4             |
|                             |              | #60                | 368.75                  | 366.26               | 71.5          | 28.5             |
|                             |              | #140               | 346.60                  | 342.93               | 61.1          | 38.9             |
|                             |              | #200               | 346.55                  | 345.32               | 57.6          | 42.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 57.6

Weight of hydrometer sample = 35.10

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 32.2          | 67.8             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 29.5          | 70.5             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0131         | 26.9          | 73.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 24.3          | 75.7             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 21.6          | 78.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 19.0          | 81.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 19.0          | 81.0             |

## Fractional Components

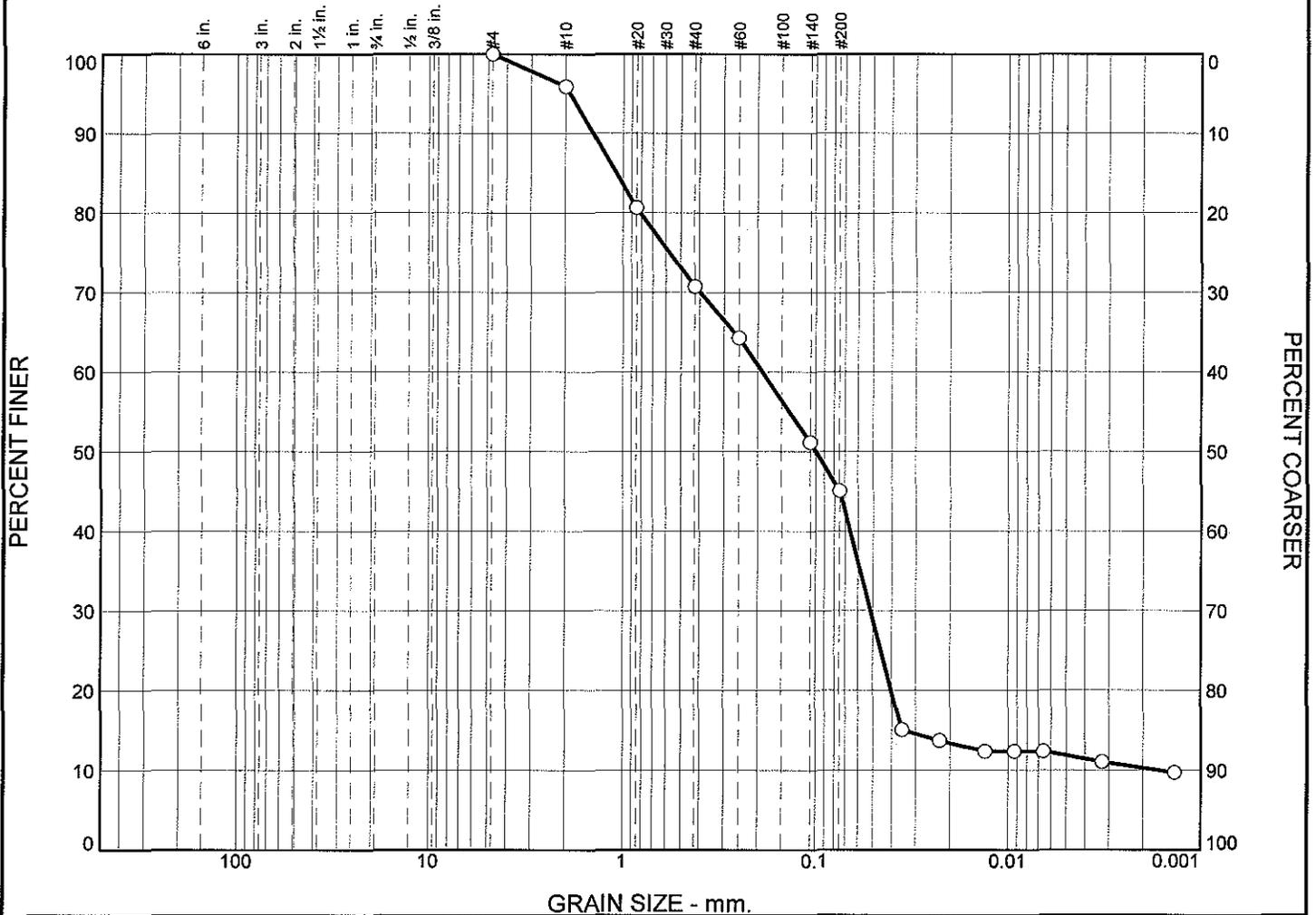
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 6.8     | 11.5 | 10.2 | 8.4  | 11.6    | 48.5  | 20.1 | 3.6  | 4.9  | 3.3     | 31.9  | 19.6 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0043 | 0.0243 | 0.0598 | 0.0953 | 0.4573 | 0.5978 | 0.7815 | 1.2042 |

| Fineness Modulus |
|------------------|
| 0.81             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.8             | 3.3             | 12.3            | 10.5            | 8.8             | 10.6            | 15.9           | 23.2           | 1.8  | 0.4  | 1.0     | 11.4   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 1.0837          | 0.1890          | 0.0993          | 0.0515          | 0.0349          | 0.0017          | 8.32           | 112.11         |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |   |
|--|---|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 501812    <b>Sample Number:</b> L0912909-10</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p> <p style="text-align: center;"><b>Figure</b></p> |
|--|---|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501812  
 Sample Number: L0912909-10  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.52  
 Tare Wt. = 4.12  
 Minus #200 from wash = 36.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 53.94                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 484.35                  | 482.16               | 95.9          | 4.1              |
|                             |              | #20                | 419.45                  | 411.21               | 80.7          | 19.3             |
|                             |              | #40                | 383.26                  | 377.92               | 70.8          | 29.2             |
|                             |              | #60                | 373.51                  | 370.01               | 64.3          | 35.7             |
|                             |              | #140               | 354.41                  | 347.33               | 51.1          | 48.9             |
|                             |              | #200               | 349.86                  | 346.58               | 45.1          | 54.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 45.1  
 Weight of hydrometer sample = 53.94  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 15.0          | 85.0             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 13.7          | 86.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 12.4          | 87.6             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 12.4          | 87.6             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0066         | 12.4          | 87.6             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 11.0          | 89.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 9.7           | 90.3             |

## Fractional Components

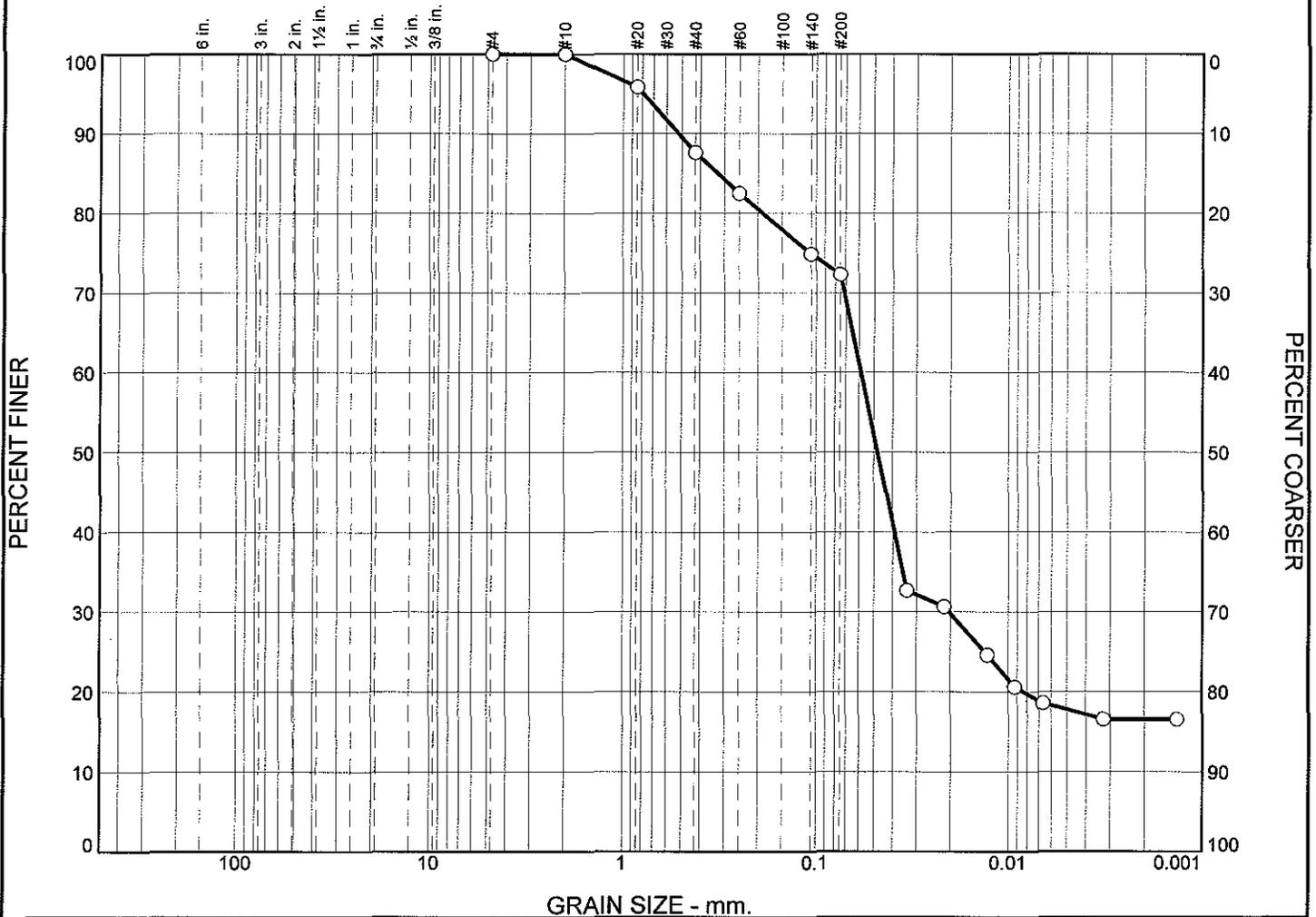
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.8     | 3.3      | 12.3    | 10.5 | 8.8  | 10.6 | 15.9    | 58.1  | 23.2 | 1.8  | 0.4  | 1.0     | 26.4 | 11.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0017          | 0.0349          | 0.0401          | 0.0515          | 0.0993          | 0.1890          | 0.8114          | 1.0837          | 1.4340          | 1.8974          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.18             | 112.11         | 8.32           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0             | 0.0             | 3.4             | 7.1             | 7.0             | 6.1             | 13.1           | 31.0           | 5.4  | 7.3  | 2.5     | 17.1   |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.3242          | 0.0585          | 0.0478          | 0.0204          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912909 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 501813 <b>Sample Number:</b> L0912909-11 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501813  
 Sample Number: L0912909-11  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 27.99  
 Tare Wt. = 4.17  
 Minus #200 from wash = 58.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 57.60                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 407.92                  | 405.52               | 95.8          | 4.2              |
|                             |              | #40                | 364.01                  | 359.28               | 87.6          | 12.4             |
|                             |              | #60                | 369.22                  | 366.26               | 82.5          | 17.5             |
|                             |              | #140               | 347.30                  | 342.93               | 74.9          | 25.1             |
|                             |              | #200               | 346.81                  | 345.32               | 72.3          | 27.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 72.3  
 Weight of hydrometer sample = 57.60  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0160         | 1.0162            | 0.0133 | 13.0 | 12.9       | 0.0338         | 32.7          | 67.3             |
| 5.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0216         | 30.7          | 69.3             |
| 15.00               | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0128         | 24.6          | 75.4             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 20.6          | 79.4             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 18.6          | 81.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 16.6          | 83.4             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 16.6          | 83.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 3.4     | 7.1  | 7.0  | 6.1  | 13.1    | 36.7  | 31.0 | 5.4  | 7.3  | 2.5     | 46.2  | 17.1 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0084 | 0.0204 | 0.0478 | 0.0585 | 0.1888 | 0.3242 | 0.5195 | 0.7923 |

| Fineness Modulus |
|------------------|
| 0.49             |

Alpha Analytical



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501826  
 Sample Number: L0912909-12  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 21.83  
 Tare Wt. = 4.17  
 Minus #200 from wash = 59.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.81                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 482.16                  | 482.16               | 100.0         | 0.0              |
|                             |              | #20                | 412.99                  | 411.21               | 95.9          | 4.1              |
|                             |              | #40                | 382.10                  | 377.92               | 86.4          | 13.6             |
|                             |              | #60                | 372.49                  | 370.01               | 80.7          | 19.3             |
|                             |              | #140               | 350.90                  | 347.33               | 72.6          | 27.4             |
|                             |              | #200               | 347.77                  | 346.58               | 69.9          | 30.1             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 69.9  
 Weight of hydrometer sample = 43.81  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 36.4          | 63.6             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 33.8          | 66.2             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 28.7          | 71.3             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 26.2          | 73.8             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 23.6          | 76.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 21.0          | 79.0             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 21.0          | 79.0             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 3.3     | 8.1  | 7.9  | 6.5  | 12.2    | 38.0  | 26.2 | 5.3  | 5.6  | 3.2     | 40.3  | 21.7 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0148 | 0.0473 | 0.0596 | 0.2314 | 0.3729 | 0.5522 | 0.7941 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.53                    |



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 501826

Sample Number: WG381751-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 27.08  
 Tare Wt. = 4.13  
 Minus #200 from wash = 57.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 54.48                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 485.10                  | 484.84               | 99.5          | 0.5              |
|                             |              | #20                | 410.07                  | 405.52               | 91.2          | 8.8              |
|                             |              | #40                | 364.89                  | 359.28               | 80.9          | 19.1             |
|                             |              | #60                | 368.91                  | 366.26               | 76.0          | 24.0             |
|                             |              | #140               | 346.65                  | 342.93               | 69.2          | 30.8             |
|                             |              | #200               | 346.47                  | 345.32               | 67.1          | 32.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 67.1

Weight of hydrometer sample = 54.48

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 28.1          | 71.9             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 26.1          | 73.9             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 22.2          | 77.8             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 18.2          | 81.8             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 18.2          | 81.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 16.2          | 83.8             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 16.2          | 83.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.1     | 0.4      | 6.7     | 9.5  | 7.3  | 5.5  | 12.6    | 41.6  | 30.3 | 4.0  | 5.4  | 1.5     | 41.2 | 16.7  |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0108 | 0.0358 | 0.0533 | 0.0651 | 0.3864 | 0.5611 | 0.7856 | 1.2583 |

| Fineness Modulus |
|------------------|
| 0.70             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501911  
 Sample Number: L0912909-13  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.48  
 Tare Wt. = 4.12  
 Minus #200 from wash = 32.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 44.92                       | 0.00         | #4                 | 522.38                  | 520.95               | 96.8          | 3.2              |
|                             |              | #10                | 483.03                  | 482.16               | 94.9          | 5.1              |
|                             |              | #20                | 415.11                  | 411.21               | 86.2          | 13.8             |
|                             |              | #40                | 382.13                  | 377.92               | 76.8          | 23.2             |
|                             |              | #60                | 373.52                  | 370.01               | 69.0          | 31.0             |
|                             |              | #140               | 355.23                  | 347.33               | 51.4          | 48.6             |
|                             |              | #200               | 350.35                  | 346.58               | 43.0          | 57.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 43.0  
 Weight of hydrometer sample = 44.92  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 17.3          | 82.7             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 15.7          | 84.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 14.2          | 85.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 12.6          | 87.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 12.6          | 87.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 12.6          | 87.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 11.1          | 88.9             |

## Fractional Components

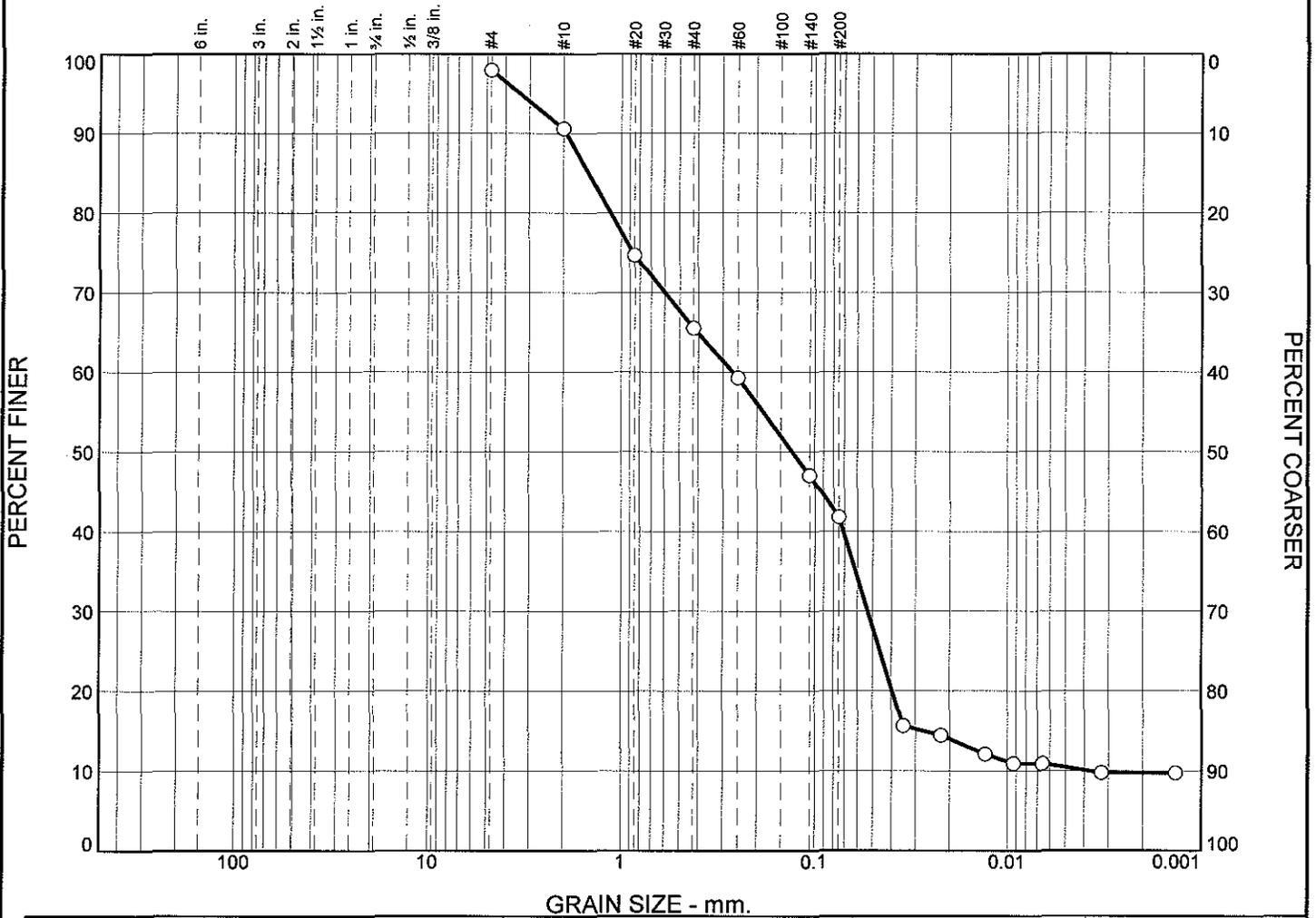
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 1.5      | 7.1     | 8.8  | 10.0 | 14.2 | 18.0    | 58.1  | 20.0 | 2.1  | 2.1  |         | 24.2 | 12.6  |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0176 | 0.0384 | 0.0514 | 0.1000 | 0.1611 | 0.5375 | 0.7779 | 1.2364 | 2.1103 |

| Fineness Modulus |
|------------------|
| 1.07             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 5.9             | 12.9    | 10.0            | 8.4  | 9.9             | 13.8    | 20.3            | 2.4  | 2.0             | 0.9     | 10.0           |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 1.4818          |   | 0.2658          |         | 0.1306          |      | 0.0530          |         | 0.0273          |      | 0.0039          |         | 2.75           |  | 69.01          |

| Material Description |  |  |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |  |  |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912909 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 501912 <b>Sample Number:</b> L0912909-14 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p>   |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 501912

Sample Number: L0912909-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 39.70  
 Tare Wt. = 4.19  
 Minus #200 from wash = 37.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 56.70                       | 0.00         | #4                 | 523.05                  | 521.88               | 97.9          | 2.1              |
|                             |              | #10                | 489.01                  | 484.84               | 90.6          | 9.4              |
|                             |              | #20                | 414.55                  | 405.52               | 74.7          | 25.3             |
|                             |              | #40                | 364.46                  | 359.28               | 65.5          | 34.5             |
|                             |              | #60                | 369.80                  | 366.26               | 59.3          | 40.7             |
|                             |              | #140               | 349.88                  | 342.93               | 47.0          | 53.0             |
|                             |              | #200               | 348.29                  | 345.32               | 41.8          | 58.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 41.8

Weight of hydrometer sample = 56.70

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 15.6          | 84.4             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 14.5          | 85.5             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 12.1          | 87.9             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 10.9          | 89.1             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 10.9          | 89.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 9.7           | 90.3             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 9.7           | 90.3             |

## Fractional Components

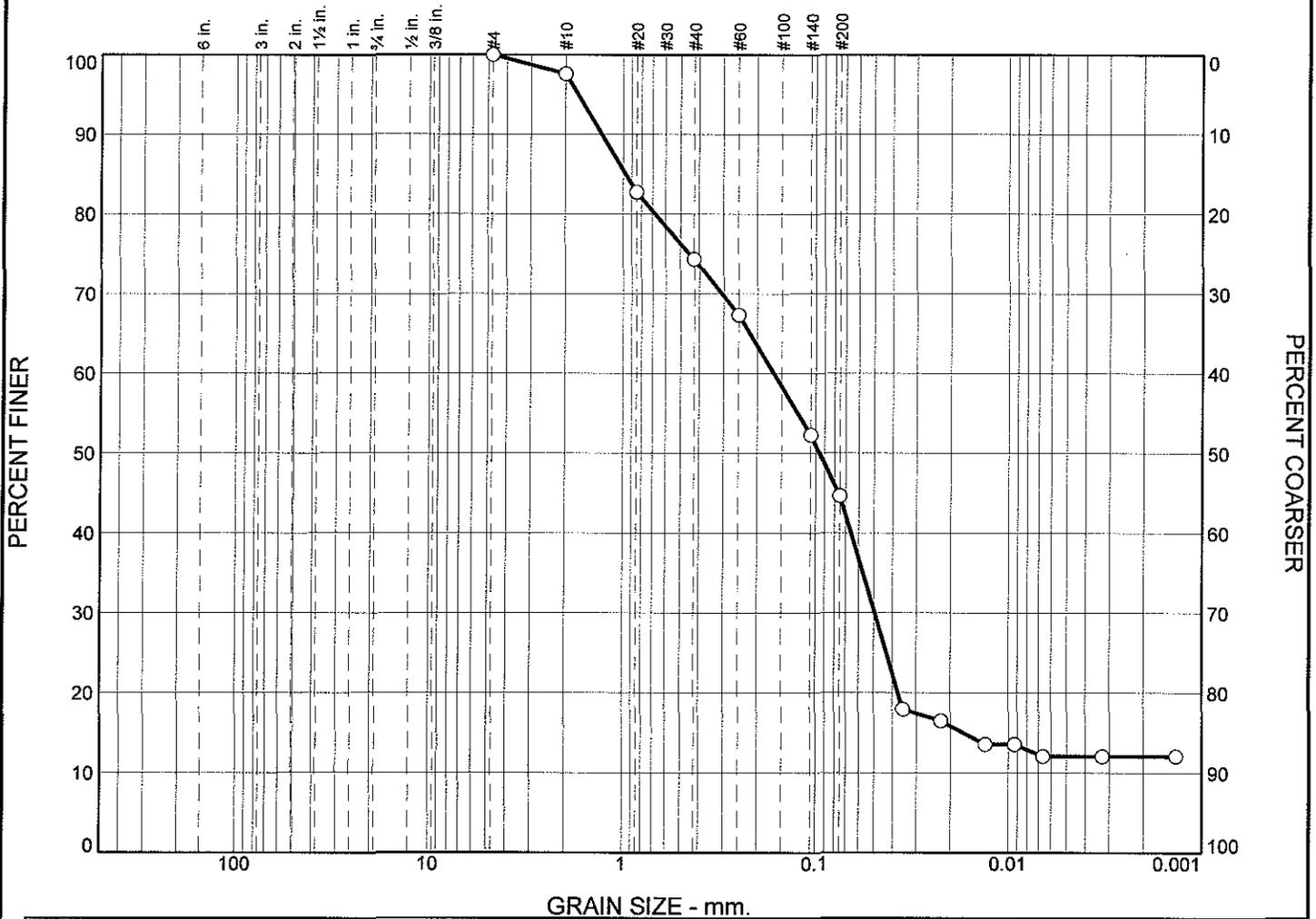
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.9      | 12.9    | 10.0 | 8.4  | 9.9  | 13.8    | 55.0  | 20.3 | 2.4  | 2.0  | 0.9     | 25.6  | 10.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0039          | 0.0273          | 0.0395          | 0.0530          | 0.1306          | 0.2658          | 1.1327          | 1.4818          | 1.9384          | 3.3628          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.46             | 69.01          | 2.75           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.5             | 1.9             | 12.0            | 9.3             | 9.0             | 12.1            | 17.0           | 20.7           | 3.0  | 1.7  | 0.7     | 12.1   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.9679          | 0.1645          | 0.0955          | 0.0495          | 0.0172          |                 |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912909 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 501913 <b>Sample Number:</b> L0912909-15 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p>   |  |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501913  
 Sample Number: L0912909-15  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 37.17  
 Tare Wt. = 4.10  
 Minus #200 from wash = 32.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 48.85                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 483.33                  | 482.16               | 97.6          | 2.4              |
|                             |              | #20                | 418.47                  | 411.21               | 82.7          | 17.3             |
|                             |              | #40                | 382.03                  | 377.92               | 74.3          | 25.7             |
|                             |              | #60                | 373.43                  | 370.01               | 67.3          | 32.7             |
|                             |              | #140               | 354.67                  | 347.33               | 52.3          | 47.7             |
|                             |              | #200               | 350.31                  | 346.58               | 44.7          | 55.3             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 44.7  
 Weight of hydrometer sample = 48.85  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 17.9          | 82.1             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 16.5          | 83.5             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 13.5          | 86.5             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 13.5          | 86.5             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 12.1          | 87.9             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 12.1          | 87.9             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 12.1          | 87.9             |

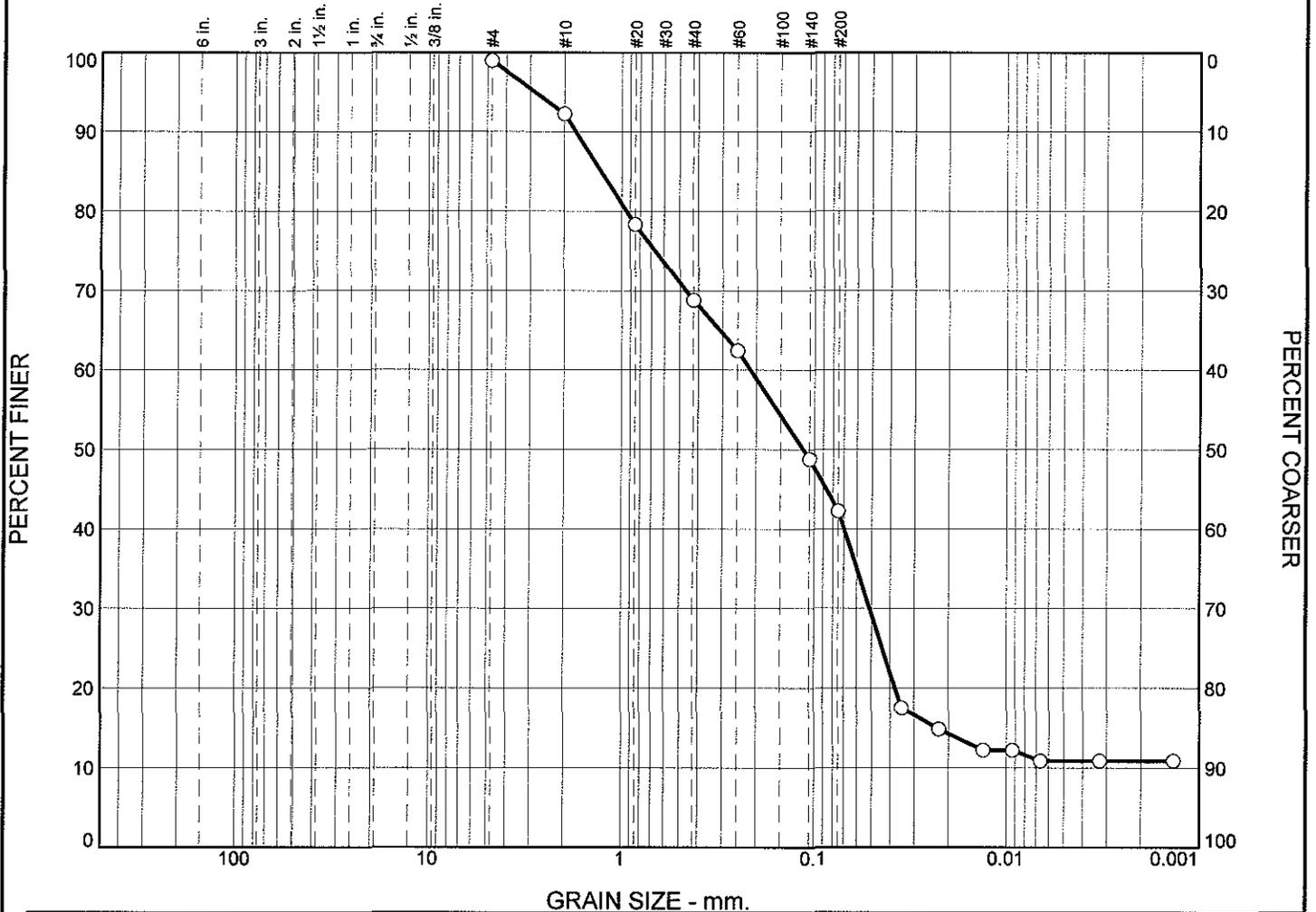
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.5     | 1.9      | 12.0    | 9.3  | 9.0  | 12.1 | 17.0    | 59.4  | 20.7 | 3.0  | 1.7  | 0.7     | 26.1  | 12.1 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0172 | 0.0372 | 0.0495 | 0.0955 | 0.1645 | 0.6781 | 0.9679 | 1.2908 | 1.7215 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 1.07                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|---|----------|---------|---------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
|   |          |         |         |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |         |         | 5.3        | 11.3    | 10.0   | 8.6    | 11.0 | 15.0    | 19.6   | 3.8  | 1.5  | 0.6     | 10.9   |
| × | LL       | PL      | D85     | D60        | D50     | D30    | D15    | D10  | Cc      | Cu     |      |      |         |        |
| ○ |          |         | 1.2810  | 0.2145     | 0.1146  | 0.0513 | 0.0230 |      |         |        |      |      |         |        |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912909 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 501926 <b>Sample Number:</b> L0912909-16 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 501926  
 Sample Number: L0912909-16  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.13  
 Tare Wt. = 4.16  
 Minus #200 from wash = 33.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.25                       | 0.00         | #4                 | 522.40                  | 521.88               | 99.0          | 1.0              |
|                             |              | #10                | 488.29                  | 484.84               | 92.3          | 7.7              |
|                             |              | #20                | 412.66                  | 405.52               | 78.3          | 21.7             |
|                             |              | #40                | 364.16                  | 359.28               | 68.8          | 31.2             |
|                             |              | #60                | 369.52                  | 366.26               | 62.4          | 37.6             |
|                             |              | #140               | 349.94                  | 342.93               | 48.8          | 51.2             |
|                             |              | #200               | 348.66                  | 345.32               | 42.2          | 57.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 42.2  
 Weight of hydrometer sample = 51.25  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 17.5          | 82.5             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 14.8          | 85.2             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 12.2          | 87.8             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 12.2          | 87.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 10.9          | 89.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 10.9          | 89.1             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 10.9          | 89.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.3      | 11.3    | 10.0 | 8.6  | 11.0 | 15.0    | 55.9  | 19.6 | 3.8  | 1.5  | 0.6     | 25.5  | 10.9 |

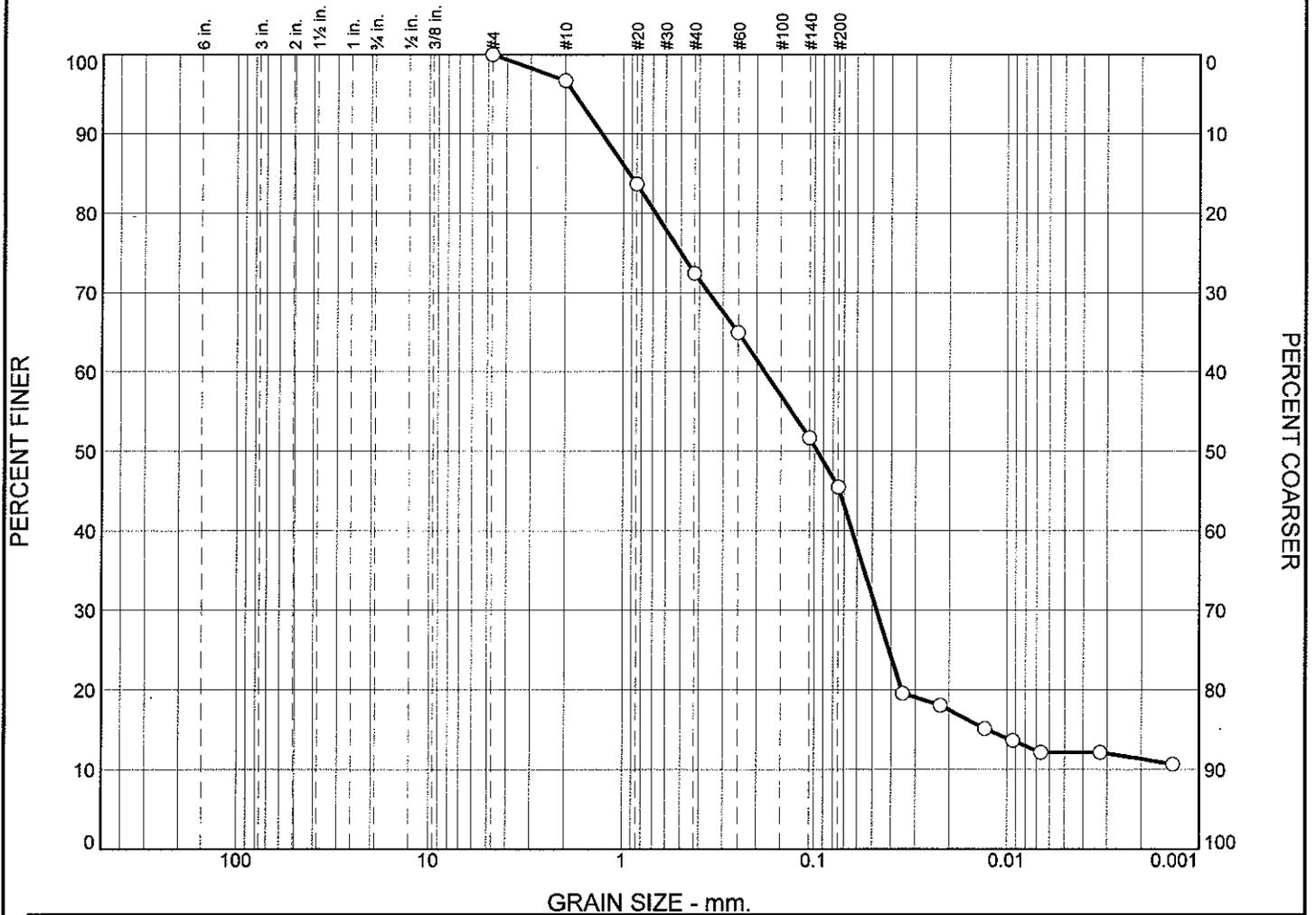
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0230          | 0.0376          | 0.0513          | 0.1146          | 0.2145          | 0.9423          | 1.2810          | 1.7415          | 2.8464          |

Fineness Modulus

1.31

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.7       | 2.6        | 10.6    | 11.0   | 10.2   | 10.7 | 14.9    | 20.1   | 3.1  | 3.2  | 0.7     | 12.2   |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  |         | Cc     | Cu   |      |         |        |
| <input type="radio"/>               |            |           | 0.9287    | 0.1815     | 0.0965  | 0.0474 | 0.0127 |      |         |        |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** L0912909    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 **Source of Sample:** 502011    **Sample Number:** L0912909-17

**Remarks:**

**Alpha Analytical**  
**Mansfield, MA**

**Figure**

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 502011  
 Sample Number: L0912909-17  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.89  
 Tare Wt. = 4.19  
 Minus #200 from wash = 37.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 49.35                       | 0.00         | #4                 | 520.95                  | 520.95               | 100.0         | 0.0              |
|                             |              | #10                | 483.78                  | 482.16               | 96.7          | 3.3              |
|                             |              | #20                | 417.66                  | 411.21               | 83.6          | 16.4             |
|                             |              | #40                | 383.46                  | 377.92               | 72.4          | 27.6             |
|                             |              | #60                | 373.70                  | 370.01               | 64.9          | 35.1             |
|                             |              | #140               | 353.87                  | 347.33               | 51.7          | 48.3             |
|                             |              | #200               | 349.64                  | 346.58               | 45.5          | 54.5             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 45.5  
 Weight of hydrometer sample = 49.35  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 19.6          | 80.4             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 18.1          | 81.9             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 15.1          | 84.9             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 13.6          | 86.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 12.2          | 87.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 12.2          | 87.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 10.7          | 89.3             |

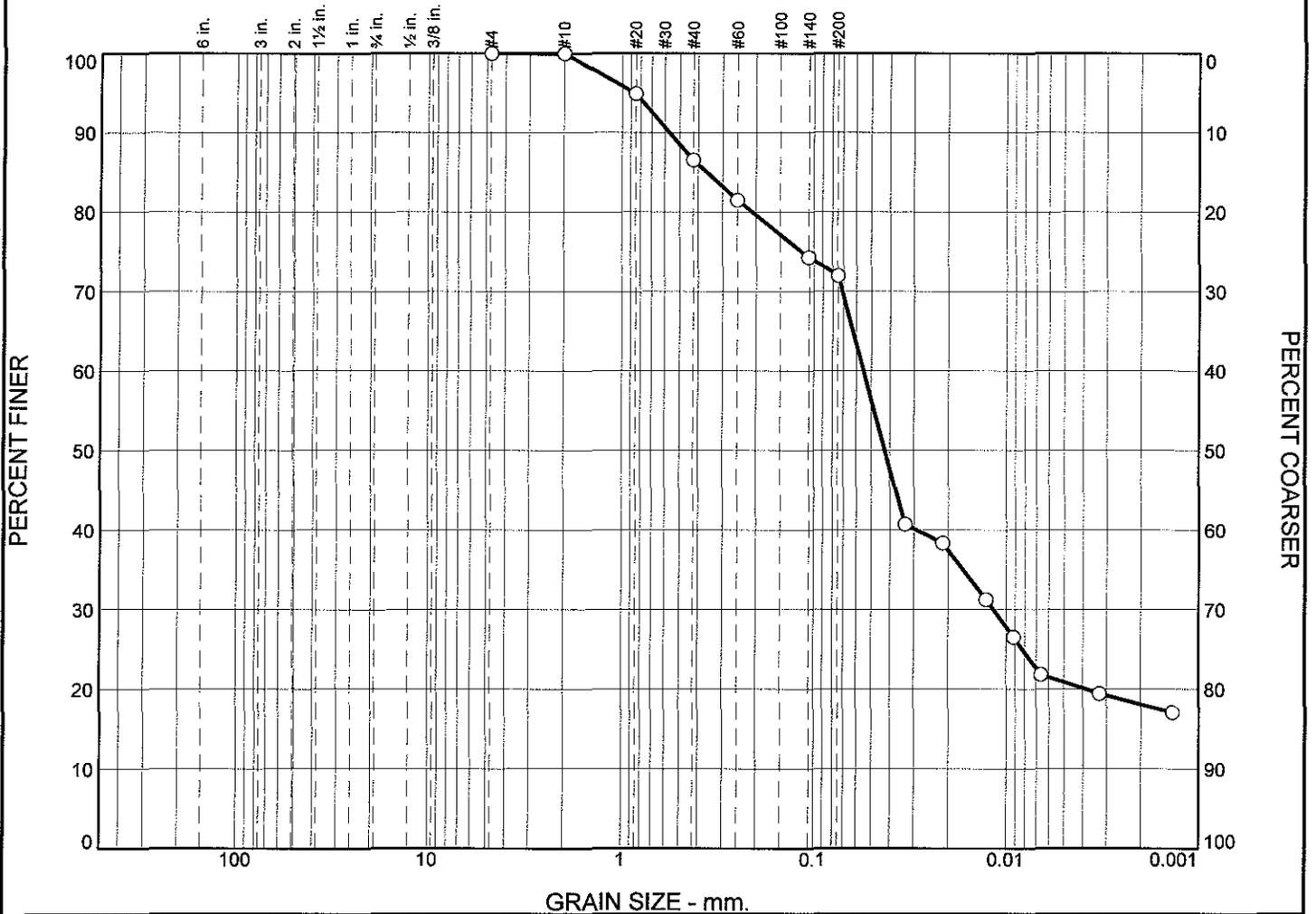
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.7     | 2.6      | 10.6    | 11.0 | 10.2 | 10.7 | 14.9    | 57.4  | 20.1 | 3.1  | 3.2  | 0.7     | 27.1  | 12.2 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0127 | 0.0352 | 0.0474 | 0.0965 | 0.1815 | 0.6786 | 0.9287 | 1.2884 | 1.7873 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 1.11                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |      |                 | % Silt |                |                |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|------|-----------------|--------|----------------|----------------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine | V. Fine         | Crs.   | Med.           | Fine           | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.0             | 0.0             | 4.1             | 7.4             | 7.0             | 5.8  | 10.8            | 24.6   | 6.2            | 9.9            | 4.2     | 20.0   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> | C <sub>u</sub> |         |        |
| <input type="radio"/>               |            |           | 0.3620          | 0.0550          | 0.0425          | 0.0116          |                 |      |                 |        |                |                |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** L0912909    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 502012    **Sample Number:** L0912909-18

**Remarks:**

**Alpha Analytical**  
**Mansfield, MA**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 502012  
 Sample Number: L0912909-18  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.65  
 Tare Wt. = 4.13  
 Minus #200 from wash = 60.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 48.87                       | 0.00         | #4                 | 521.88                  | 521.88               | 100.0         | 0.0              |
|                             |              | #10                | 484.84                  | 484.84               | 100.0         | 0.0              |
|                             |              | #20                | 408.01                  | 405.52               | 94.9          | 5.1              |
|                             |              | #40                | 363.38                  | 359.28               | 86.5          | 13.5             |
|                             |              | #60                | 368.71                  | 366.26               | 81.5          | 18.5             |
|                             |              | #140               | 346.47                  | 342.93               | 74.3          | 25.7             |
|                             |              | #200               | 346.43                  | 345.32               | 72.0          | 28.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 72.0  
 Weight of hydrometer sample = 48.87  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0170         | 1.0172            | 0.0133 | 14.0 | 12.6       | 0.0334         | 40.7          | 59.3             |
| 5.00                | 22.0            | 1.0160         | 1.0162            | 0.0133 | 13.0 | 12.9       | 0.0213         | 38.4          | 61.6             |
| 15.00               | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0127         | 31.3          | 68.7             |
| 30.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0092         | 26.5          | 73.5             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 21.8          | 78.2             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 19.4          | 80.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 17.1          | 82.9             |

## Fractional Components

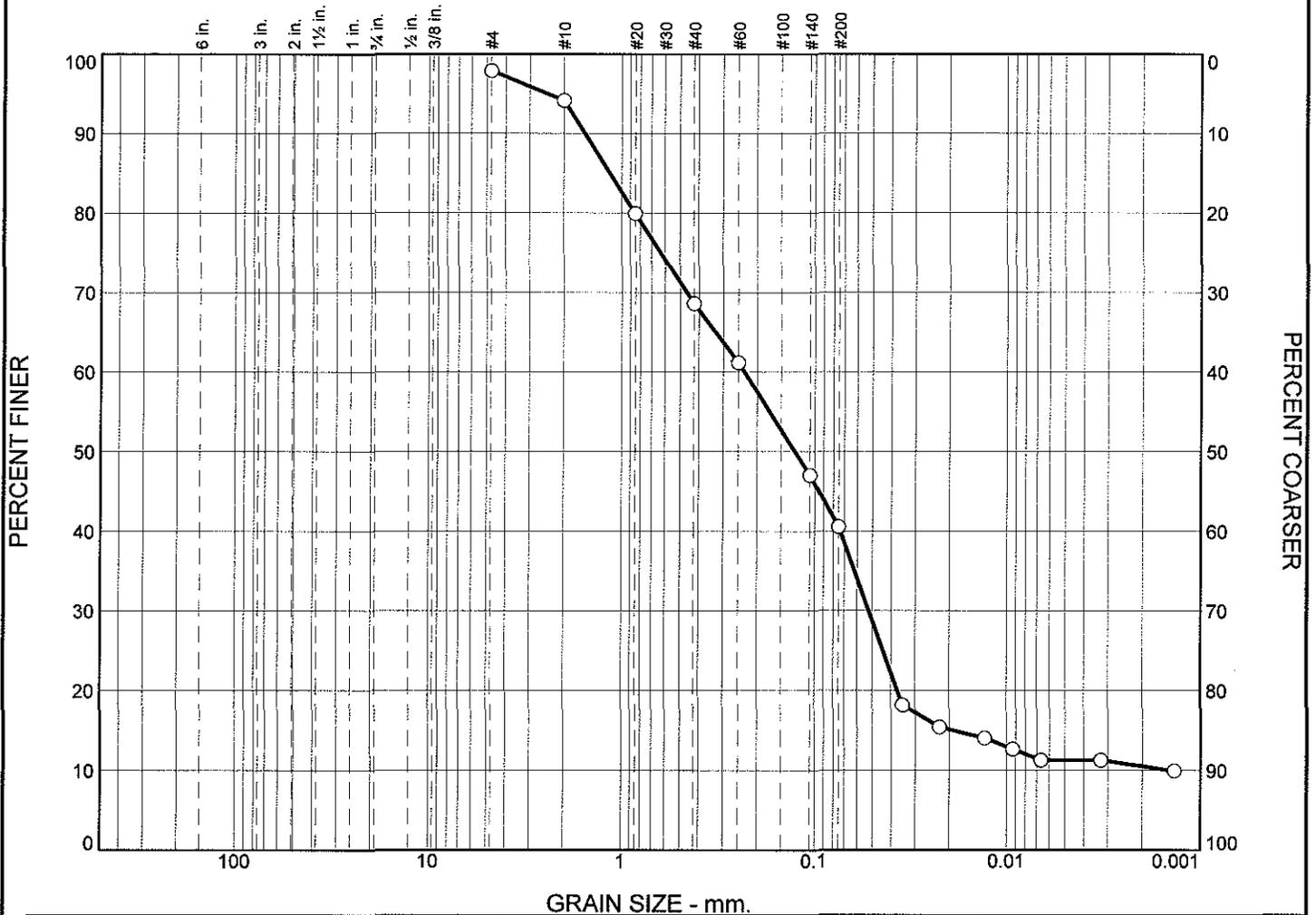
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 4.1     | 7.4  | 7.0  | 5.8  | 10.8    | 35.1  | 24.6 | 6.2  | 9.9  | 4.2     | 44.9  | 20.0 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0039 | 0.0116 | 0.0425 | 0.0550 | 0.2093 | 0.3620 | 0.5668 | 0.8637 |

| Fineness Modulus |
|------------------|
| 0.52             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 3.0             | 11.6            | 11.3            | 10.1            | 11.5            | 14.5           | 17.8           | 2.9  | 2.6  | 0.6     | 11.3   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 1.1528          | 0.2328          | 0.1269          | 0.0523          | 0.0193          | 0.0015          | 8.02           | 159.32         |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502013    <b>Sample Number:</b> L0912909-19</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912909

Location: 502013

Sample Number: L0912909-19

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 37.77  
 Tare Wt. = 4.20  
 Minus #200 from wash = 29.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 47.44                       | 0.00         | #4                 | 521.95                  | 520.95               | 97.9          | 2.1              |
|                             |              | #10                | 483.93                  | 482.16               | 94.2          | 5.8              |
|                             |              | #20                | 417.96                  | 411.21               | 79.9          | 20.1             |
|                             |              | #40                | 383.29                  | 377.92               | 68.6          | 31.4             |
|                             |              | #60                | 373.54                  | 370.01               | 61.2          | 38.8             |
|                             |              | #140               | 354.04                  | 347.33               | 47.0          | 53.0             |
|                             |              | #200               | 349.66                  | 346.58               | 40.5          | 59.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 40.5

Weight of hydrometer sample = 47.44

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 18.1          | 81.9             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 15.4          | 84.6             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 14.0          | 86.0             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 12.6          | 87.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 11.3          | 88.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 11.3          | 88.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 9.9           | 90.1             |

## Fractional Components

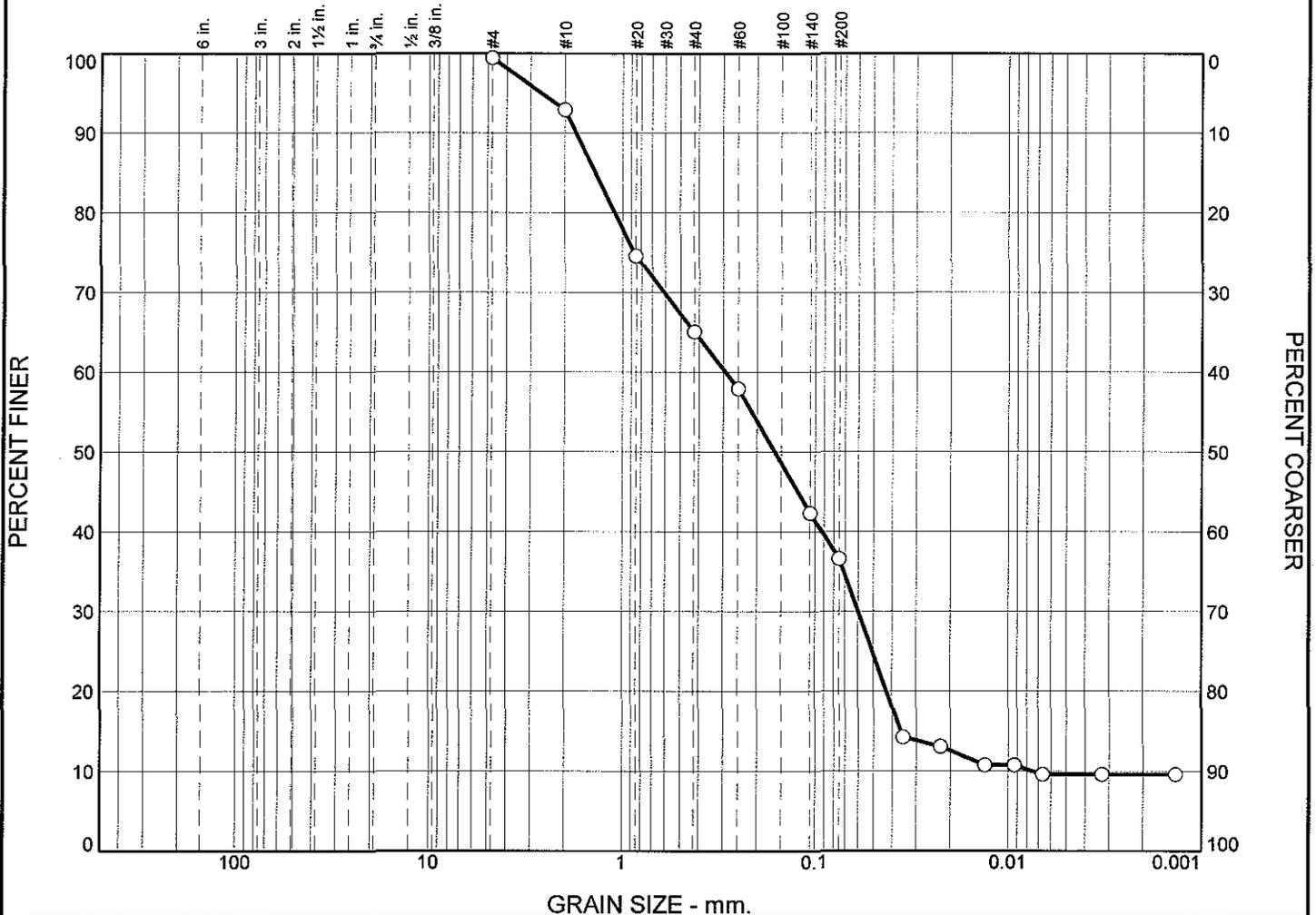
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 3.0      | 11.6    | 11.3 | 10.1 | 11.5 | 14.5    | 59.0  | 17.8 | 2.9  | 2.6  | 0.6     | 23.9 | 11.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0015          | 0.0193          | 0.0371          | 0.0523          | 0.1269          | 0.2328          | 0.8535          | 1.1528          | 1.5572          | 2.4294          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.31             | 159.32         | 8.02           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |          |   |         |   |         |   |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |   |         |   |         |   | 5.2      | 14.9    | 10.7 | 9.4  | 12.6 | 14.1    | 17.3   | 2.4  | 1.4  | 0.5     | 9.6    |

| ⊗ | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 1.3835          | 0.2922          | 0.1619          | 0.0600          | 0.0360          | 0.0075          | 1.64           | 38.77          |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912909    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502026    <b>Sample Number:</b> L0912909-20</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912909  
 Location: 502026  
 Sample Number: L0912909-20  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 40.74  
 Tare Wt. = 4.07  
 Minus #200 from wash = 27.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.40                       | 0.00         | #4                 | 522.17                  | 521.88               | 99.4          | 0.6              |
|                             |              | #10                | 488.13                  | 484.84               | 92.9          | 7.1              |
|                             |              | #20                | 414.76                  | 405.52               | 74.6          | 25.4             |
|                             |              | #40                | 364.07                  | 359.28               | 65.1          | 34.9             |
|                             |              | #60                | 369.87                  | 366.26               | 57.9          | 42.1             |
|                             |              | #140               | 350.79                  | 342.93               | 42.3          | 57.7             |
|                             |              | #200               | 348.21                  | 345.32               | 36.6          | 63.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 36.6  
 Weight of hydrometer sample = 50.40  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 14.2          | 85.8             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 13.1          | 86.9             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 10.7          | 89.3             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 10.7          | 89.3             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 9.6           | 90.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 9.6           | 90.4             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 9.6           | 90.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.2      | 14.9    | 10.7 | 9.4  | 12.6 | 14.1    | 61.7  | 17.3 | 2.4  | 1.4  | 0.5     | 21.6  | 9.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0075          | 0.0360          | 0.0427          | 0.0600          | 0.1619          | 0.2922          | 1.0955          | 1.3835          | 1.7471          | 2.6428          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.46             | 38.77          | 1.64           |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

### **New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. **NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

*Air* (Organic Parameters: EPA TO-15)

**U.S. Army Corps of Engineers**

**Department of Defense** Certificate/Lab ID: L2217.01.

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

#### **Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

# CHAIN OF CUSTODY

PAGE 6 OF 12



## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912909

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

| ALPHA Lab ID | Sample ID | Date    | Time  | Sample Matrix | Sampler's Initials | total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          | Sample Specific Comments | TOTAL # BOTTLES |
|--------------|-----------|---------|-------|---------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------|
| 1            | 501611    | 9/23/09 | 16:00 | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs                   | 1               |
| 2            | 501612    | 9/23/09 | 16:00 | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs                   | 1               |
| 3            | 501613    | 9/23/09 | 16:00 | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs                   | 1               |
|              | 501625    | 9/23/09 | 16:09 | SE            | HC                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem                 | 1               |
| 4            | 501626    | 9/23/09 | 16:09 | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs                   | 1               |
|              | 501627    | 9/23/09 | 16:09 | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch                 | 1               |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:             | Date/Time     | Received By:                 | Date/Time          |
|------------------------------|---------------|------------------------------|--------------------|
| <i>Handwritten Signature</i> | 9/23/09 18:40 | <i>Handwritten Signature</i> | 9/23/09            |
| <i>Handwritten Signature</i> | 9/24/09 9:00  | <i>Handwritten Signature</i> | 9/24/09 9:20/18:53 |
| <i>Handwritten Signature</i> | 9/24/09 11:00 | <i>Handwritten Signature</i> | 9/24/09 11:00      |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until all ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Serial No: 08031016:16

Station 135

# CHAIN OF CUSTODY

PAGE 7 OF 12



## Project Information

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

Project Name: NBH LTM V 2009

## Client Information

Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 E. Falmouth, MA 02536  
 Phone: 508-540-8080

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Fax: 508-540-1001     Standard     Rush (ONLY IF PRE-APPROVED)

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha    Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 409/2909

## Report Information    Data Deliverables    Billing Information

FAX     EMAIL     Same as Client info    PO #:  
 ADEx     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria  
 fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 5                              | 501711    | 9/23/09    | 14:00 | SE            | HC                 |
| 6                              | 501712    | 9/23/09    | 14:00 | SE            | HC                 |
| 7                              | 501713    | 9/23/09    | 14:00 | SE            | HC                 |
|                                | 501725    | 9/23/09    | 14:12 | SE            | HC                 |
| 8                              | 501726    | 9/23/09    | 14:12 | SE            | HC                 |
|                                | 501727    | 9/23/09    | 14:12 | SE            | HC                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
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|                                |           |            |       |               |                    |

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|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - |

|                     |               |                    |               |
|---------------------|---------------|--------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:       | Date/Time     |
| <i>Paul Gilbert</i> | 9/23/09 10:40 | <i>Lee Weishar</i> | 9/23/09       |
| <i>Paul Gilbert</i> | 9/24/09 9:00  | <i>Lee Weishar</i> | 9/24/09 9:20  |
| <i>Paul Gilbert</i> | 9/24/09 11:00 | <i>Lee Weishar</i> | 9/24/09 11:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Serial\_No:08031016:16



# CHAIN OF CUSTODY

PAGE OF

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 E. Falmouth, MA 02536  
 Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

ALPHA Lab ID  
 (Lab Use Only)

Sample ID

Collection

Date

Time

Sample Matrix

Sampler's Initials

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Collection Time | Sample Matrix | Sampler's Initials | total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |          |   |
|-----------------------------|-----------|-----------------|-----------------|---------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|---|
| 9                           | 501811    | 9/22/09         | 10:30           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
| 10                          | 501812    | 9/22/09         | 10:30           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
| 11                          | 501813    | 9/22/09         | 10:30           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
|                             | 501825    | 9/22/09         | 10:30           | SE            | HC                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem | 1 |
| 12                          | 501826    | 9/22/09         | 10:30           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   | 1 |
|                             | 501827    | 9/22/09         | 10:30           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch | 1 |
|                             |           |                 |                 |               |                    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |   |
|                             |           |                 |                 |               |                    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |   |
|                             |           |                 |                 |               |                    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |          |   |

Container Type

Preservative

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Relinquished By:

Date/Time

Received By

Date/Time

|                              |               |                              |               |
|------------------------------|---------------|------------------------------|---------------|
| <i>Handwritten Signature</i> | 9/22 18:56    | <i>Handwritten Signature</i> | 9/22 18:55    |
| <i>Handwritten Signature</i> | 9/23/09 09:15 | <i>Handwritten Signature</i> | 9/23/09 9:15  |
| <i>Handwritten Signature</i> | 9/23/09 10:25 | <i>Handwritten Signature</i> | 9/23/09 10:25 |

Date Rec'd in Lab

ALPHA Job #: 20912909

## Report Information Data Deliverables

FAX                       EMAIL  
 ADEx                       Add'l Deliverables

## Billing Information

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## ANALYSIS

### SAMPLE HANDLING

Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments



# CHAIN OF CUSTODY

PAGE 7 OF 14

Date Rec'd in Lab:

ALPHA Job #: 20912909

**Project Information**

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

**Turn-Around Time** Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
TEL: 508-898-9220 TEL: 508-822-9300  
FAX: 508-898-9193 FAX: 508-822-3288**Client Information**

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

 These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

**Report Information Data Deliverables** FAX  EMAIL  
 ADEX  Add'l Deliverables**Billing Information** Same as Client info PO #:**Regulatory Requirements/Report Limits**

State/Fed Program

Criteria

**ANALYSIS**

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)

Sample ID

Collection Date Time

Sample Matrix

Sampler's Initials

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Collection Time | Sample Matrix | Sampler's Initials | total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |          |
|-----------------------------|-----------|-----------------|-----------------|---------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|
| 13                          | 501911    | 9/24/09         | 09:10           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   |
| 14                          | 501912    | 9/24/09         | 09:10           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   |
| 15                          | 501913    | 9/24/09         | 09:10           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   |
|                             | 501925    | 9/24/09         | 09:14           | SE            | HC                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem |
| 16                          | 501926    | 9/24/09         | 09:14           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   |
|                             | 501927    | 9/24/09         | 09:14           | SE            | HC                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch |

Container Type

Preservative

| Relinquished By:       | Date/Time     | Received By:           | Date/Time     |
|------------------------|---------------|------------------------|---------------|
| <i>Paul Gilbert</i>    | 9/24/09 18:40 | <i>Kathleen McCann</i> | 9/24/09 19:30 |
| <i>Kathleen McCann</i> | 9/25/09 9:15  | <i>Paul Gilbert</i>    | 9/25/09 9:15  |
| <i>Paul Gilbert</i>    | 9/25/09 10:35 | <i>Kathleen McCann</i> | 9/25/09 10:35 |

Please print clearly, legibly and completely. Samples cannot be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 9 OF 14

Date Rec'd in Lab:

ALPHA Job #: L0912909

**Project Information**

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

**Turn-Around Time** Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
TEL: 508-898-9220 TEL: 508-822-9300  
FAX: 508-898-9193 FAX: 508-822-3288**Client Information**

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

 These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

**Report Information Data Deliverables** FAX  EMAIL  
 ADEx  Add'l Deliverables**Billing Information** Same as Client info PO #:**Regulatory Requirements/Report Limits**

State/Fed Program

Criteria

**ANALYSIS**

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**

Filtration  
 Done  
 Not Needed  
 Lab to do

Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 17                             | 502011    | 9/24/09    | 16:52 | SE            | HC                 |
| 18                             | 502012    | 9/24/09    | 16:52 | SE            | HC                 |
| 19                             | 502013    | 9/24/09    | 16:52 | SE            | HC                 |
|                                | 502025    | 9/24/09    | 16:56 | SE            | HC                 |
| 20                             | 502026    | 9/24/09    | 16:56 | SE            | HC                 |
|                                | 502027    | 9/24/09    | 16:56 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                     |               |                     |               |
|---------------------|---------------|---------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
| <i>Paul Gilbert</i> | 9-24-09 16:40 | <i>Paul Gilbert</i> | 9/24/09 19:39 |
| <i>Paul Gilbert</i> | 9/25/09 9:15  | <i>Paul Gilbert</i> | 9/25/09 9:15  |
| <i>Paul Gilbert</i> | 9/25/09 10:35 | <i>Paul Gilbert</i> | 9/25/09 10:35 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Serial No: 08031016:16



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912910  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Phone:          | (508) 540-8080  |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 08/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912910-01                | 502111           | NEW BEDFORD, MA            | 09/24/09 07:57                  |
| L0912910-02                | 502112           | NEW BEDFORD, MA            | 09/24/09 07:57                  |
| L0912910-03                | 502113           | NEW BEDFORD, MA            | 09/24/09 07:57                  |
| L0912910-04                | 502126           | NEW BEDFORD, MA            | 09/24/09 08:04                  |
| L0912910-05                | 508036           | NEW BEDFORD, MA            | 09/24/09 08:20                  |
| L0912910-06                | 502211           | NEW BEDFORD, MA            | 09/22/09 15:02                  |
| L0912910-07                | 502212           | NEW BEDFORD, MA            | 09/22/09 15:02                  |
| L0912910-08                | 502213           | NEW BEDFORD, MA            | 09/22/09 15:02                  |
| L0912910-09                | 502226           | NEW BEDFORD, MA            | 09/22/09 15:30                  |
| L0912910-10                | 502311           | NEW BEDFORD, MA            | 09/23/09 17:06                  |
| L0912910-11                | 502312           | NEW BEDFORD, MA            | 09/23/09 17:06                  |
| L0912910-12                | 502313           | NEW BEDFORD, MA            | 09/23/09 17:05                  |
| L0912910-13                | 502326           | NEW BEDFORD, MA            | 09/23/09 17:13                  |
| L0912910-14                | 502411           | NEW BEDFORD, MA            | 09/22/09 17:18                  |
| L0912910-15                | 502412           | NEW BEDFORD, MA            | 09/22/09 17:18                  |
| L0912910-16                | 502413           | NEW BEDFORD, MA            | 09/22/09 17:18                  |
| L0912910-17                | 502426           | NEW BEDFORD, MA            | 09/22/09 17:38                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

---

### Report Submission

This report replaces the original report issued on February 2, 2010. The report was ammended to include revised Grain Size data.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Peter Henriksen

Title: Technical Director/Representative

Date: 08/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-01  
**Client ID:** 502111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 07:57  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 25.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 20.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 7.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-02  
**Client ID:** 502112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 07:57  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 43.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 13.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 3.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.20   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.400  |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912910-03  
**Client ID:** 502113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 07:57  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912910-04  
**Client ID:** 502126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 08:04  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 48.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-05  
**Client ID:** 508036  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 08:20  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 24.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 14.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-06  
**Client ID:** 502211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 15:02  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.20   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 19.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 40.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 20.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 6.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-07  
**Client ID:** 502212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 15:02  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.50   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 25.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-08  
**Client ID:** 502213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 15:02  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.50   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 18.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 37.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 6.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-09  
**Client ID:** 502226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 15:30  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 22.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 41.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.800  |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.200  |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912910-10  
**Client ID:** 502311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:06  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.20   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 15.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.8   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 22.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.20   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912910-11  
**Client ID:** 502312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:06  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 12.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.5   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 23.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 10.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912910-12  
**Client ID:** 502313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:05  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 22.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 14.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-13  
**Client ID:** 502326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:13  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.3   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 23.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-14  
**Client ID:** 502411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 17:18  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.50   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 48.0   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.70   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-15  
**Client ID:** 502412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 17:18  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 11.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 21.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 14.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 10.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-16  
**Client ID:** 502413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 17:18  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.00   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.90   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.1   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 45.6   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 20.2   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 6.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.40   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912910-17  
**Client ID:** 502426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 17:38  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.60   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.30   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.10   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.80   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.9   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 33.4   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.7   |           | %     | 0.100 | --  | 1               | -             | 09/28/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912910

**Report Date:** 08/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG381846-1 QC Sample: L0912910-05 Client ID: 508036 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 5.1           | 4.70             | %     | 8   |      | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 5.3           | 6.50             | %     | 20  |      | 20         |
| Coarse Sand (0.50-1.00 mm)   | 9.0           | 9.00             | %     | 0   |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 16.8          | 17.0             | %     | 1   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 24.8          | 24.4             | %     | 2   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 13.2          | 14.5             | %     | 9   |      | 20         |
| Silt - (1.95-62.5 um)  | 14.0          | 13.2             | %     | 6   |      | 20         |
| Clay - (<1.95 um)  | 5.0           | 4.80             | %     | 4   |      | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912910

Project Number: TO-0018

Report Date: 08/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

## Cooler Information Custody Seal

## Cooler

|   |        |
|---|--------|
| D | Absent |
| C | Absent |
| B | Absent |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-01A | Glass 250ml unpreserved | D      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912910

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-02A | Glass 250ml unpreserved | D      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-03A | Glass 250ml unpreserved | D      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912910

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-04A | Glass 250ml unpreserved | D      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-05A | Glass 250ml unpreserved | D      | N/A | 2.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912910

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-06A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-07A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-08A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-09A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-10A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-11A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912910

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-12A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-13A | Glass 250ml unpreserved | C      | N/A | 3.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-14A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-15A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912910-16A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912910-17A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NI** - Not Ignitable.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.

**Report Format:** Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

*Data Qualifiers*

- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912910  
**Report Date:** 08/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

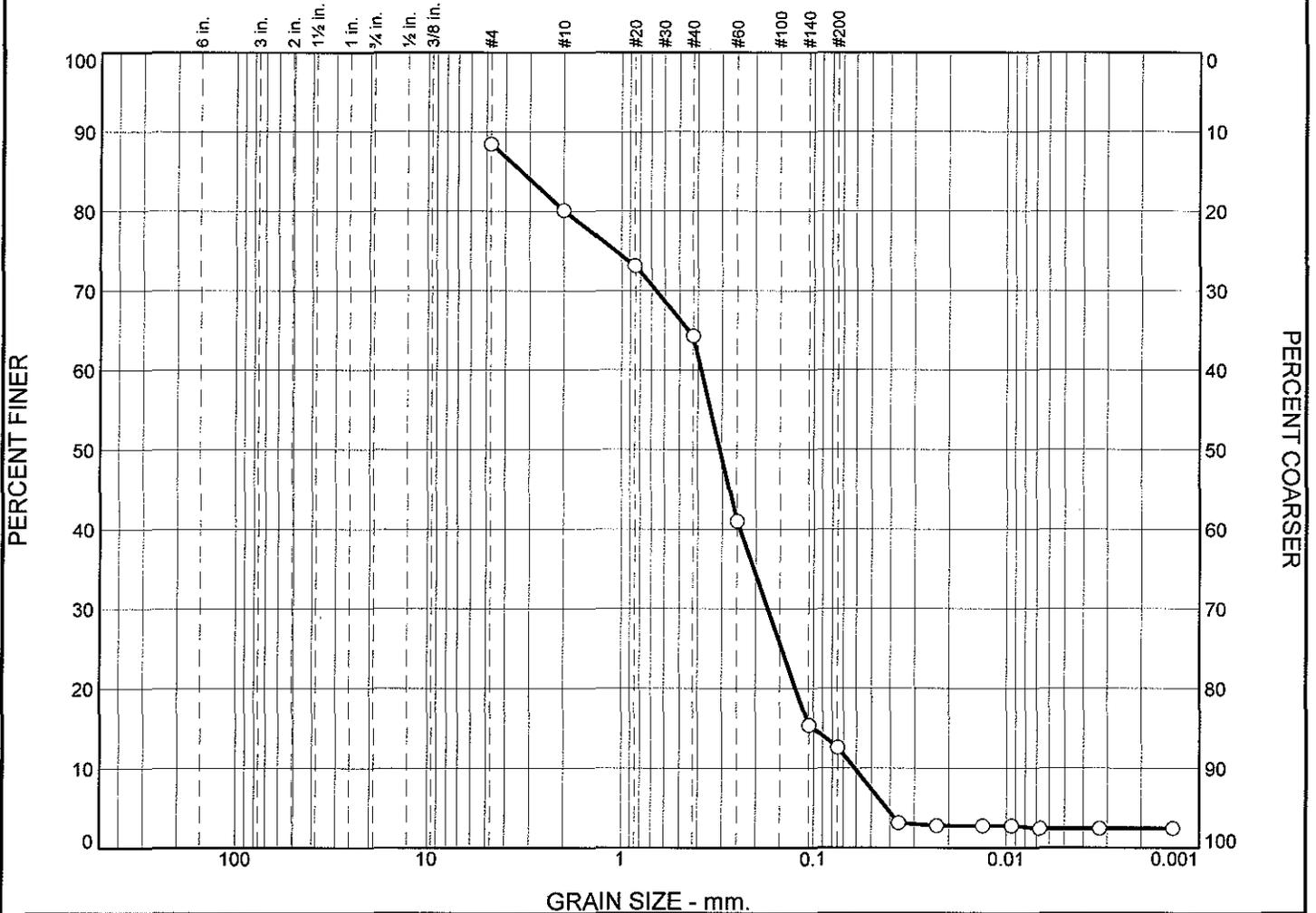
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# ASTM D422-63

## Wet Sieve Hydrometer

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |          |         |                 | 6.7             | 5.7             | 8.1             | 25.3            | 20.7            | 10.1           | 7.2            | 0.2  | 0.2  | 0.2     | 2.4    |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |          |         | 3.3223          | 0.3855          | 0.3069          | 0.1729          | 0.1009          | 0.0613          | 1.26           | 6.29           |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502111    <b>Sample Number:</b> L0912910-01</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502111

Sample Number: L0912910-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 56.63  
 Tare Wt. = 3.96  
 Minus #200 from wash = 12.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 59.87                       | 0.00         | #4                 | 528.78                  | 521.87               | 88.5          | 11.5             |
|                             |              | #10                | 489.87                  | 484.86               | 80.1          | 19.9             |
|                             |              | #20                | 409.70                  | 405.51               | 73.1          | 26.9             |
|                             |              | #40                | 364.53                  | 359.25               | 64.3          | 35.7             |
|                             |              | #60                | 380.15                  | 366.22               | 41.0          | 59.0             |
|                             |              | #140               | 358.21                  | 342.88               | 15.4          | 84.6             |
|                             |              | #200               | 346.58                  | 344.91               | 12.6          | 87.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 12.6

Weight of hydrometer sample = 59.87

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 3.1           | 96.9             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 2.8           | 97.2             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 2.8           | 97.2             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 2.8           | 97.2             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 2.4           | 97.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 2.4           | 97.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.4           | 97.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.7      | 5.7     | 8.1  | 25.3 | 20.7 | 10.1    | 69.9  | 7.2  | 0.2  | 0.2  | 0.2     | 7.8   | 2.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0613          | 0.1009          | 0.1237          | 0.1729          | 0.3069          | 0.3855          | 1.9781          | 3.3223          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.11             | 6.29           | 1.26           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912910  
 Location: 502112  
 Sample Number: L0912910-02  
 USCS Classification: SW  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 41.61  
 Tare Wt. = 4.10  
 Minus #200 from wash = 26.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.23                       | 0.00         | #4                 | 522.23                  | 519.16               | 94.0          | 6.0              |
|                             |              | #10                | 487.39                  | 459.91               | 40.4          | 59.6             |
|                             |              | #20                | 383.53                  | 375.18               | 24.1          | 75.9             |
|                             |              | #40                | 370.89                  | 366.48               | 15.5          | 84.5             |
|                             |              | #60                | 371.32                  | 366.98               | 7.0           | 93.0             |
|                             |              | #140               | 345.24                  | 344.18               | 4.9           | 95.1             |
|                             |              | #200               | 348.10                  | 346.56               | 1.9           | 98.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 1.9  
 Weight of hydrometer sample = 51.23  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 0.7           | 99.3             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 0.6           | 99.4             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 0.6           | 99.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 0.5           | 99.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.4           | 99.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.4           | 99.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.4           | 99.6             |

## Fractional Components

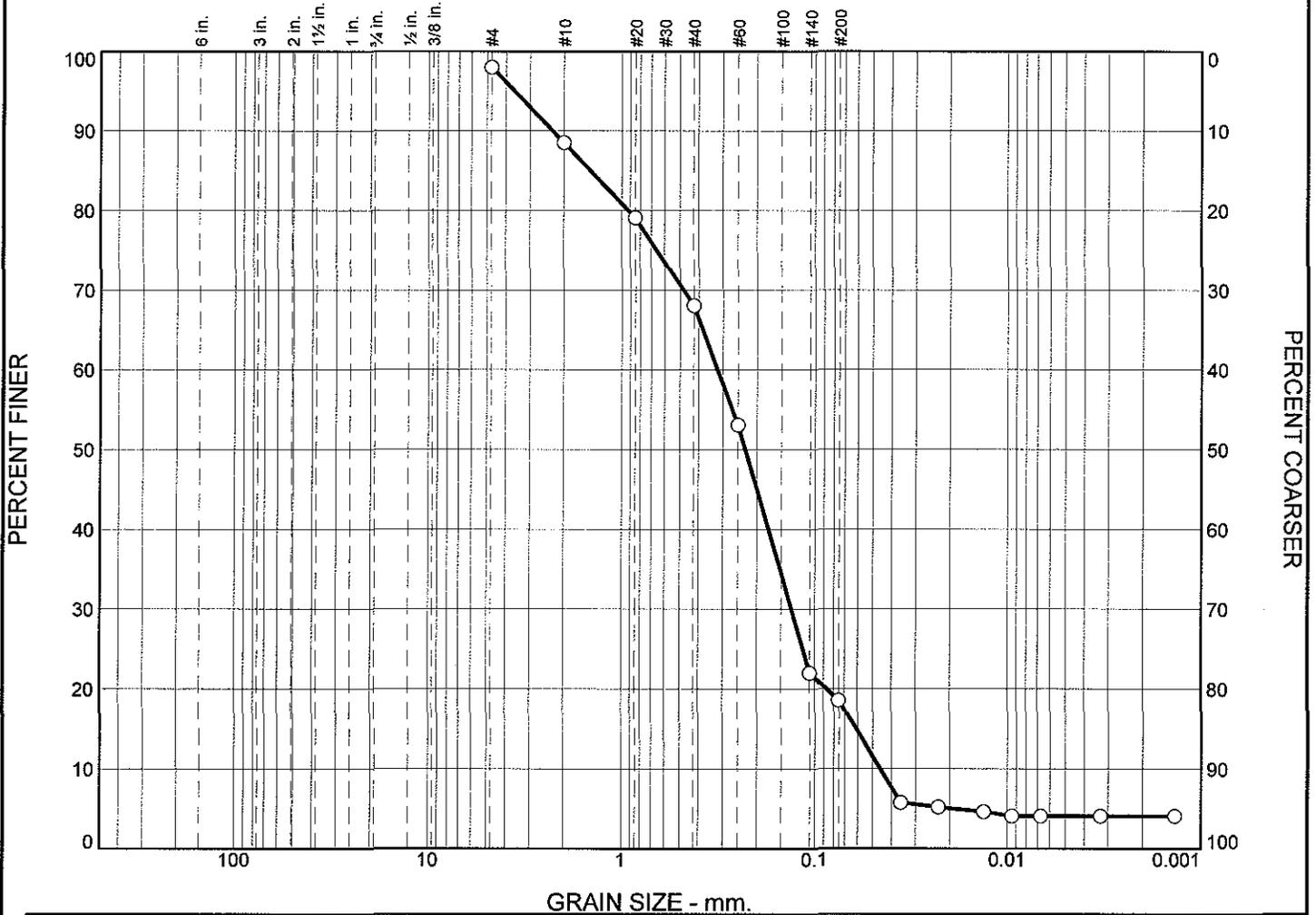
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 43.0     | 13.2    | 9.7  | 10.5 | 1.7  | 3.7     | 38.8  | 0.9  | 0.1  | 0.1  | 0.1     | 1.2   | 0.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.3019          | 0.4129          | 0.6126          | 1.1606          | 2.3361          | 2.7449          | 3.7896          | 4.1078          | 4.4527          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.90             | 9.09           | 1.63           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 7.6        | 7.6     | 10.2   | 17.6   | 25.1   | 12.6    | 9.8    | 0.8  | 0.7  |         | 4.1    |
| ×          | LL        | PL        | D85        | D60     | D50    | D30    | D15    | D10     | Cc     | Cu   |      |         |        |
| ○          |           |           | 1.4542     | 0.3195  | 0.2297 | 0.1322 | 0.0611 | 0.0458  | 1.20   | 6.98 |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912910    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring

○ **Source of Sample:** 502113    **Sample Number:** L0912910-03

**Remarks:**

**Figure**

**Alpha Analytical**  
**Mansfield, MA**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912910  
 Location: 502113  
 Sample Number: L0912910-03  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 47.33  
 Tare Wt. = 4.16  
 Minus #200 from wash = 18.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 52.99                       | 0.00         | #4                 | 522.93                  | 521.87               | 98.0          | 2.0              |
|                             |              | #10                | 489.89                  | 484.86               | 88.5          | 11.5             |
|                             |              | #20                | 410.50                  | 405.51               | 79.1          | 20.9             |
|                             |              | #40                | 365.09                  | 359.25               | 68.1          | 31.9             |
|                             |              | #60                | 374.17                  | 366.22               | 53.1          | 46.9             |
|                             |              | #140               | 359.34                  | 342.88               | 22.0          | 78.0             |
|                             |              | #200               | 346.74                  | 344.91               | 18.6          | 81.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 18.6  
 Weight of hydrometer sample = 52.99  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 5.7           | 94.3             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 5.2           | 94.8             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 4.6           | 95.4             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 4.1           | 95.9             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 4.1           | 95.9             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 4.1           | 95.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 4.1           | 95.9             |

## Fractional Components

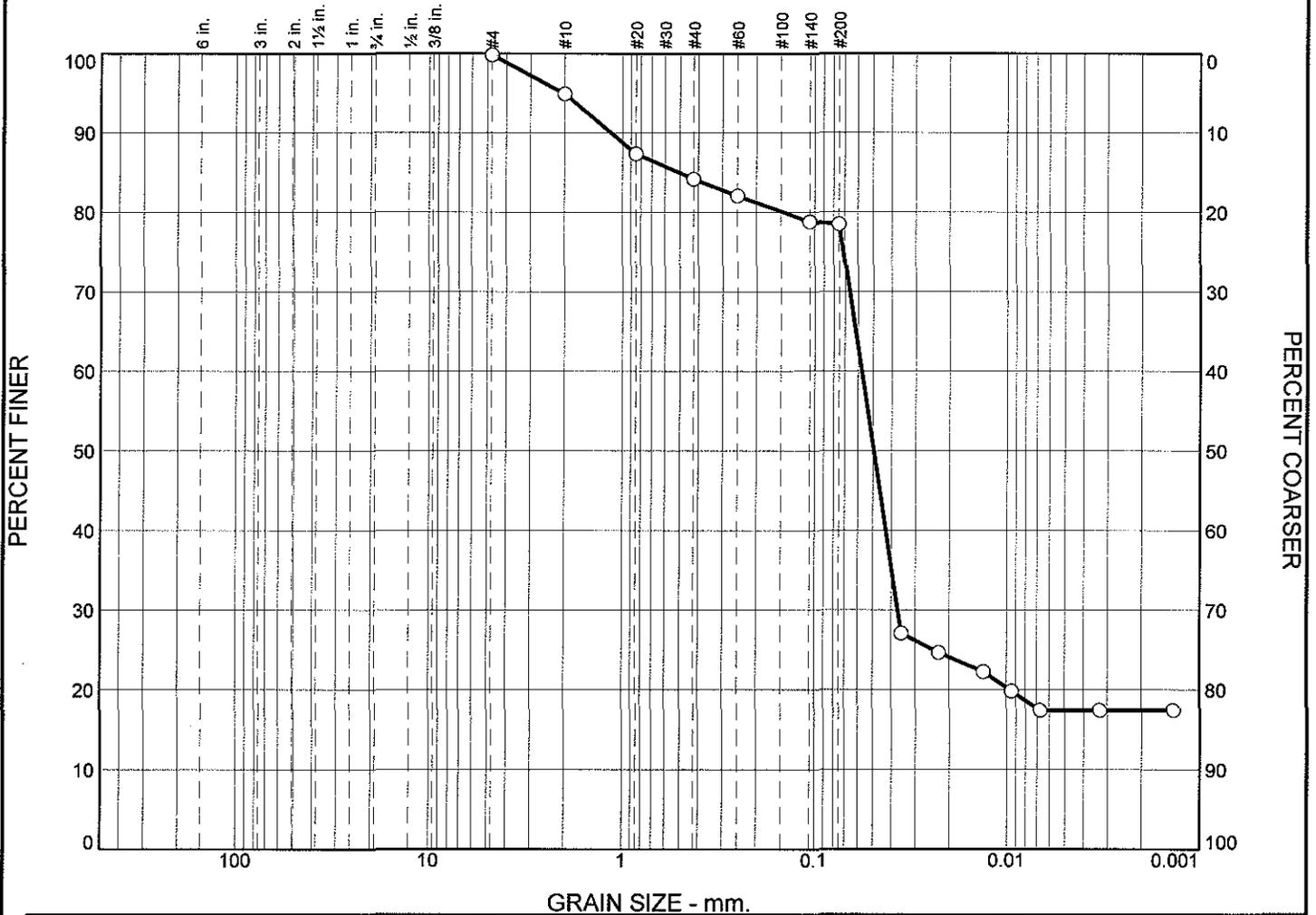
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.6      | 7.6     | 10.2 | 17.6 | 25.1 | 12.6    | 73.1  | 9.8  | 0.8  | 0.7  |         | 11.3  | 4.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0458          | 0.0611          | 0.0867          | 0.1322          | 0.2297          | 0.3195          | 0.9232          | 1.4542          | 2.2914          | 3.6140          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.63             | 6.98           | 1.20           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 3.9        | 6.1     | 3.9  | 2.8  | 2.7  | 13.4    | 39.7   | 3.3  | 4.5  | 1.1     | 17.4   |

| X | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.5073          | 0.0573          | 0.0495          | 0.0370          |                 |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502126    <b>Sample Number:</b> L0912910-04</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p><br><br><br><br><br><br><br><p style="text-align: center;"><b>Figure</b></p> |
|--|--|

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912910  
**Location:** 502126  
**Sample Number:** L0912910-04  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 42.55  
 Tare Wt. = 4.06  
 Minus #200 from wash = 92.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 522.24                      | 0.00         | #4                 | 520.22                  | 519.16               | 99.8          | 0.2              |
|                             |              | #10                | 485.40                  | 459.91               | 94.9          | 5.1              |
|                             |              | #20                | 414.60                  | 375.18               | 87.4          | 12.6             |
|                             |              | #40                | 383.09                  | 366.48               | 84.2          | 15.8             |
|                             |              | #60                | 378.13                  | 366.98               | 82.1          | 17.9             |
|                             |              | #140               | 361.12                  | 344.18               | 78.8          | 21.2             |
|                             |              | #200               | 348.04                  | 346.56               | 78.5          | 21.5             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 78.5  
 Weight of hydrometer sample = 52.24  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 27.1          | 72.9             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 24.7          | 75.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 22.2          | 77.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 19.8          | 80.2             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 17.4          | 82.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 17.4          | 82.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 17.4          | 82.6             |

**Fractional Components**

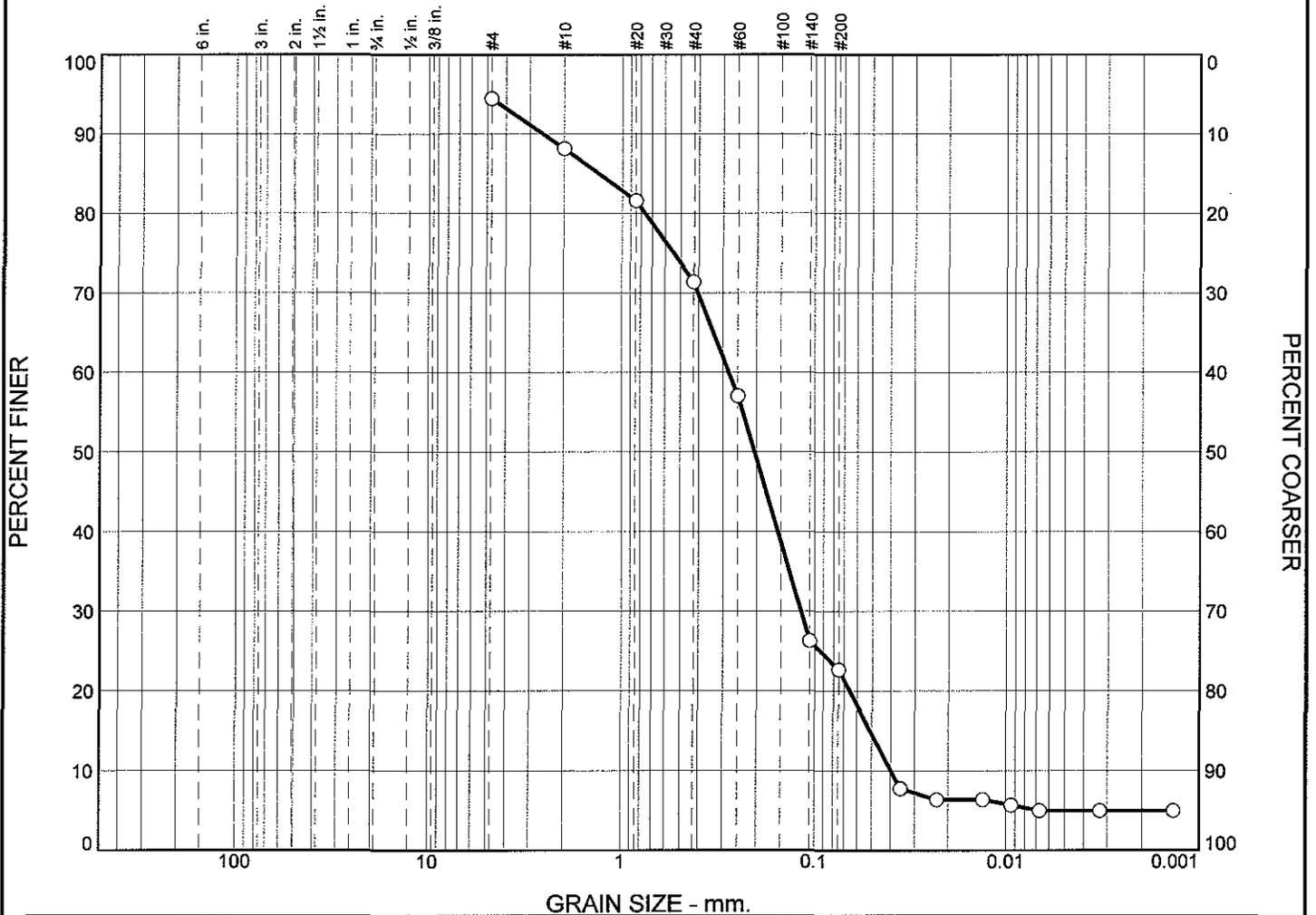
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 3.9      | 6.1     | 3.9  | 2.8  | 2.7  | 13.4    | 28.9  | 39.7 | 3.3  | 4.5  | 1.1     | 48.6 | 17.4  |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0096 | 0.0370 | 0.0495 | 0.0573 | 0.1453 | 0.5073 | 1.1455 | 2.0299 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.65                    |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 5.1             | 5.3             | 9.0             | 16.8            | 24.8            | 13.2           | 11.7           | 0.9  | 1.1  | 0.3     | 5.0    |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 1.3263          | 0.2790          | 0.2055          | 0.1176          | 0.0511          | 0.0397          | 1.25           | 7.02           |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 508036    <b>Sample Number:</b> L0912910-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 508036

Sample Number: L0912910-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 45.68  
 Tare Wt. = 4.05  
 Minus #200 from wash = 21.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 52.74                       | 0.00         | #4                 | 524.79                  | 521.87               | 94.5          | 5.5              |
|                             |              | #10                | 488.19                  | 484.86               | 88.1          | 11.9             |
|                             |              | #20                | 408.97                  | 405.51               | 81.6          | 18.4             |
|                             |              | #40                | 364.64                  | 359.25               | 71.4          | 28.6             |
|                             |              | #60                | 373.78                  | 366.22               | 57.0          | 43.0             |
|                             |              | #140               | 359.10                  | 342.88               | 26.3          | 73.7             |
|                             |              | #200               | 346.83                  | 344.91               | 22.6          | 77.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 22.6

Weight of hydrometer sample = 52.74

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 7.7           | 92.3             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 6.4           | 93.6             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 6.4           | 93.6             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 5.7           | 94.3             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 5.0           | 95.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 5.0           | 95.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 5.0           | 95.0             |

## Fractional Components

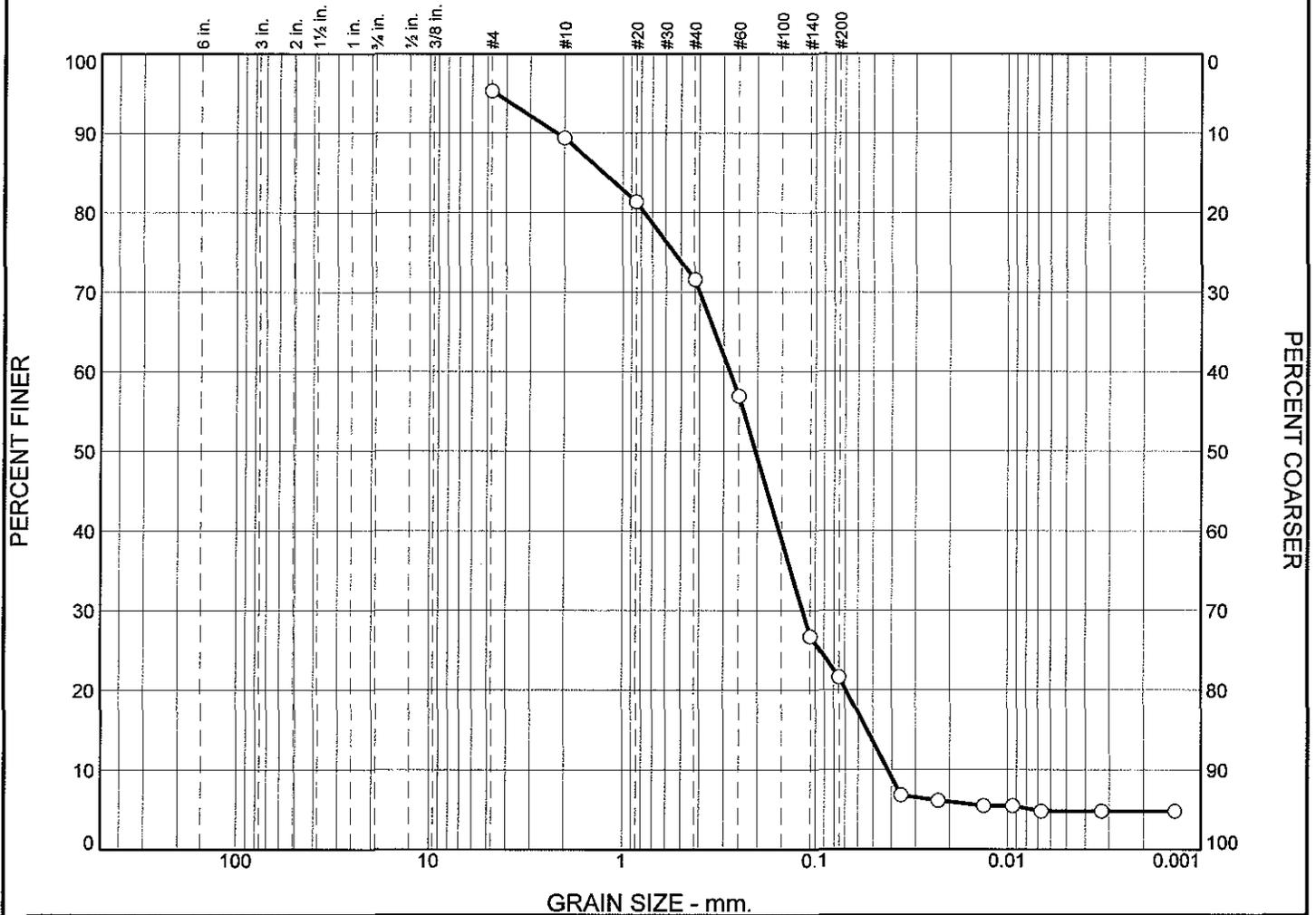
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.1      | 5.3     | 9.0  | 16.8 | 24.8 | 13.2    | 69.1  | 11.7 | 0.9  | 1.1  | 0.3     | 14.0  | 5.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0397          | 0.0511          | 0.0657          | 0.1176          | 0.2055          | 0.2790          | 0.7632          | 1.3263          | 2.5771          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.55             | 7.02           | 1.25           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |           | 4.7        | 6.5     | 9.0    | 17.0   | 24.4   | 14.5    | 11.4   | 0.9  | 0.6  | 0.3     | 4.8    |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| <input type="radio"/>               |            |           | 1.2514    | 0.2794     | 0.2054  | 0.1164 | 0.0539 | 0.0420 | 1.16    | 6.66   |      |      |         |        |

| Material Description  |  |  |  |  |  |  |  | USCS | AASHTO |
|-----------------------|--|--|--|--|--|--|--|------|--------|
| <input type="radio"/> |  |  |  |  |  |  |  |      |        |

|   |  |
|---|--|
| <b>Project No.</b> L0912910 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 508036 <b>Sample Number:</b> WG381846-1 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912910  
 Location: 508036  
 Sample Number: WG381846-1  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 48.20  
 Tare Wt. = 3.95  
 Minus #200 from wash = 15.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 52.07                       | 0.00         | #4                 | 521.61                  | 519.16               | 95.3          | 4.7              |
|                             |              | #10                | 462.98                  | 459.91               | 89.4          | 10.6             |
|                             |              | #20                | 379.36                  | 375.18               | 81.4          | 18.6             |
|                             |              | #40                | 371.57                  | 366.48               | 71.6          | 28.4             |
|                             |              | #60                | 374.62                  | 366.98               | 56.9          | 43.1             |
|                             |              | #140               | 359.91                  | 344.18               | 26.7          | 73.3             |
|                             |              | #200               | 349.21                  | 346.56               | 21.6          | 78.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 21.6  
 Weight of hydrometer sample = 52.07  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 6.8           | 93.2             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 6.1           | 93.9             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 5.5           | 94.5             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 5.5           | 94.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 4.8           | 95.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 4.8           | 95.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 4.8           | 95.2             |

## Fractional Components

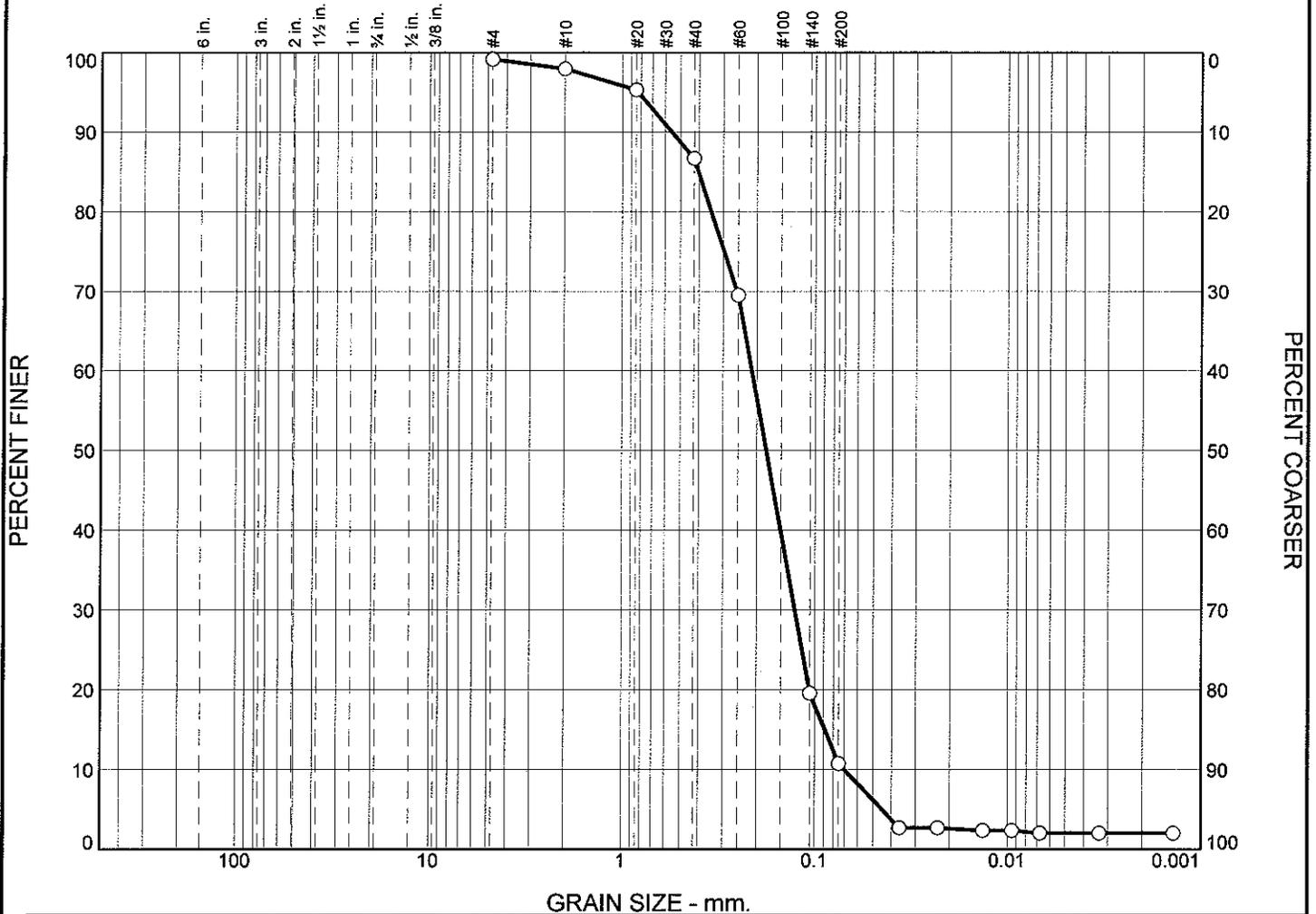
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 4.7      | 6.5     | 9.0  | 17.0 | 24.4 | 14.5    | 71.4  | 11.4 | 0.9  | 0.6  | 0.3     | 13.2 | 4.8   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0420          | 0.0539          | 0.0692          | 0.1164          | 0.2054          | 0.2794          | 0.7712          | 1.2514          | 2.1844          | 4.5489          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.52             | 6.66           | 1.16           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |           | 0.9        | 2.2     | 7.1    | 19.2   | 40.3   | 20.5    | 6.0    | 0.3  | 0.2  | 0.2     | 2.0    |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| <input type="radio"/>               |            |           | 0.4038    | 0.2124     | 0.1789  | 0.1268 | 0.0886 | 0.0701 | 1.08    | 3.03   |      |      |         |        |

| Material Description  |  |  |  |  |  |  |  | USCS | AASHTO |
|-----------------------|--|--|--|--|--|--|--|------|--------|
| <input type="radio"/> |  |  |  |  |  |  |  |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912910 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 502211 <b>Sample Number:</b> L0912910-06 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502211

Sample Number: L0912910-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 52.32  
 Tare Wt. = 4.02  
 Minus #200 from wash = 8.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 52.91                       | 0.00         | #4                 | 522.31                  | 521.87               | 99.2          | 0.8              |
|                             |              | #10                | 485.50                  | 484.86               | 98.0          | 2.0              |
|                             |              | #20                | 406.92                  | 405.51               | 95.3          | 4.7              |
|                             |              | #40                | 363.82                  | 359.25               | 86.7          | 13.3             |
|                             |              | #60                | 375.34                  | 366.25               | 69.5          | 30.5             |
|                             |              | #140               | 369.29                  | 342.88               | 19.6          | 80.4             |
|                             |              | #200               | 349.57                  | 344.91               | 10.8          | 89.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 10.8

Weight of hydrometer sample = 52.91

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 2.7           | 97.3             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 2.7           | 97.3             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 2.4           | 97.6             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 2.4           | 97.6             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 2.0           | 98.0             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 2.0           | 98.0             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 2.0           | 98.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 2.2     | 7.1  | 19.2 | 40.3 | 20.5    | 89.3  | 6.0  | 0.3  | 0.2  | 0.2     | 6.7   | 2.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0701          | 0.0886          | 0.1068          | 0.1268          | 0.1789          | 0.2124          | 0.3460          | 0.4038          | 0.5558          | 0.8302          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.00             | 3.03           | 1.08           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502212

Sample Number: L0912910-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 52.56

Tare Wt. = 3.90

Minus #200 from wash = 7.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 52.78                       | 0.00         | #4                 | 522.76                  | 519.16               | 93.2          | 6.8              |
|                             |              | #10                | 460.91                  | 459.91               | 91.3          | 8.7              |
|                             |              | #20                | 380.01                  | 375.18               | 82.1          | 17.9             |
|                             |              | #40                | 372.62                  | 366.48               | 70.5          | 29.5             |
|                             |              | #60                | 370.09                  | 366.98               | 64.6          | 35.4             |
|                             |              | #140               | 351.98                  | 344.17               | 49.8          | 50.2             |
|                             |              | #200               | 351.20                  | 346.56               | 41.0          | 59.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 41.0

Weight of hydrometer sample = 52.78

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 10.3          | 89.7             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 9.0           | 91.0             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 9.0           | 91.0             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 9.0           | 91.0             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 7.8           | 92.2             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 7.8           | 92.2             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 7.8           | 92.2             |

## Fractional Components

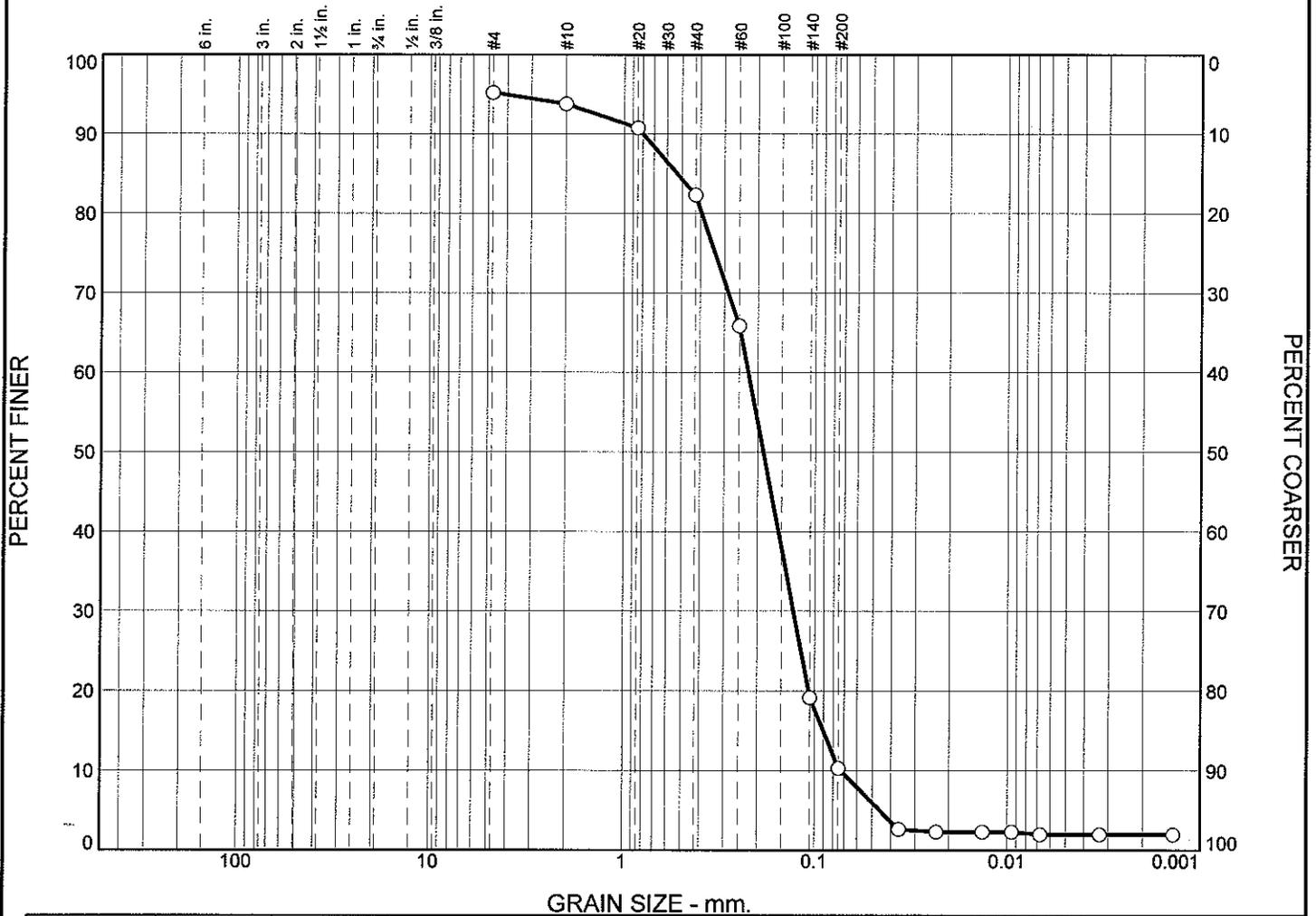
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.5      | 7.4     | 10.7 | 8.6  | 11.9 | 19.4    | 58.0  | 23.5 | 0.8  | 0.7  | 0.5     | 25.5  | 7.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0333          | 0.0407          | 0.0458          | 0.0579          | 0.1072          | 0.1914          | 0.7485          | 1.1113          | 1.7736          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.31             | 5.75           | 0.53           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | %   | Sand            |         |                 |      |                 | %   | Clay            |         |                 |      |                |         |                |
|---|----------|---|---------|---|-----------------|-----|-----------------|---------|-----------------|------|-----------------|-----|-----------------|---------|-----------------|------|----------------|---------|----------------|
|   |          |   |         |   |                 |     | Granules        | V. Crs. | Crs.            | Med. | Fine            |     |                 | V. Fine | Crs.            | Med. | Fine           | V. Fine |                |
| ○ |          |   |         |   |                 | 1.1 | 2.5             | 7.0     | 18.4            | 37.8 | 19.8            | 5.8 | 0.2             | 0.2     | 0.1             | 2.0  |                |         |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |     | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |     | D <sub>15</sub> |         | D <sub>10</sub> |      | C <sub>c</sub> |         | C <sub>u</sub> |
| ○ |          |   |         |   | 0.5302          |     | 0.2245          |         | 0.1868          |      | 0.1294          |     | 0.0902          |         | 0.0730          |      | 1.02           |         | 3.07           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502213    <b>Sample Number:</b> L0912910-08</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502213

Sample Number: L0912910-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 51.62  
 Tare Wt. = 4.06  
 Minus #200 from wash = 8.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.82                       | 0.00         | #4                 | 524.35                  | 521.87               | 95.2          | 4.8              |
|                             |              | #10                | 485.61                  | 484.86               | 93.8          | 6.2              |
|                             |              | #20                | 407.07                  | 405.51               | 90.8          | 9.2              |
|                             |              | #40                | 363.63                  | 359.25               | 82.3          | 17.7             |
|                             |              | #60                | 374.74                  | 366.22               | 65.9          | 34.1             |
|                             |              | #140               | 367.09                  | 342.88               | 19.1          | 80.9             |
|                             |              | #200               | 349.50                  | 344.91               | 10.3          | 89.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 10.3

Weight of hydrometer sample = 51.82

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 2.6           | 97.4             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 2.3           | 97.7             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 2.3           | 97.7             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 2.3           | 97.7             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 2.0           | 98.0             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 2.0           | 98.0             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 2.0           | 98.0             |

## Fractional Components

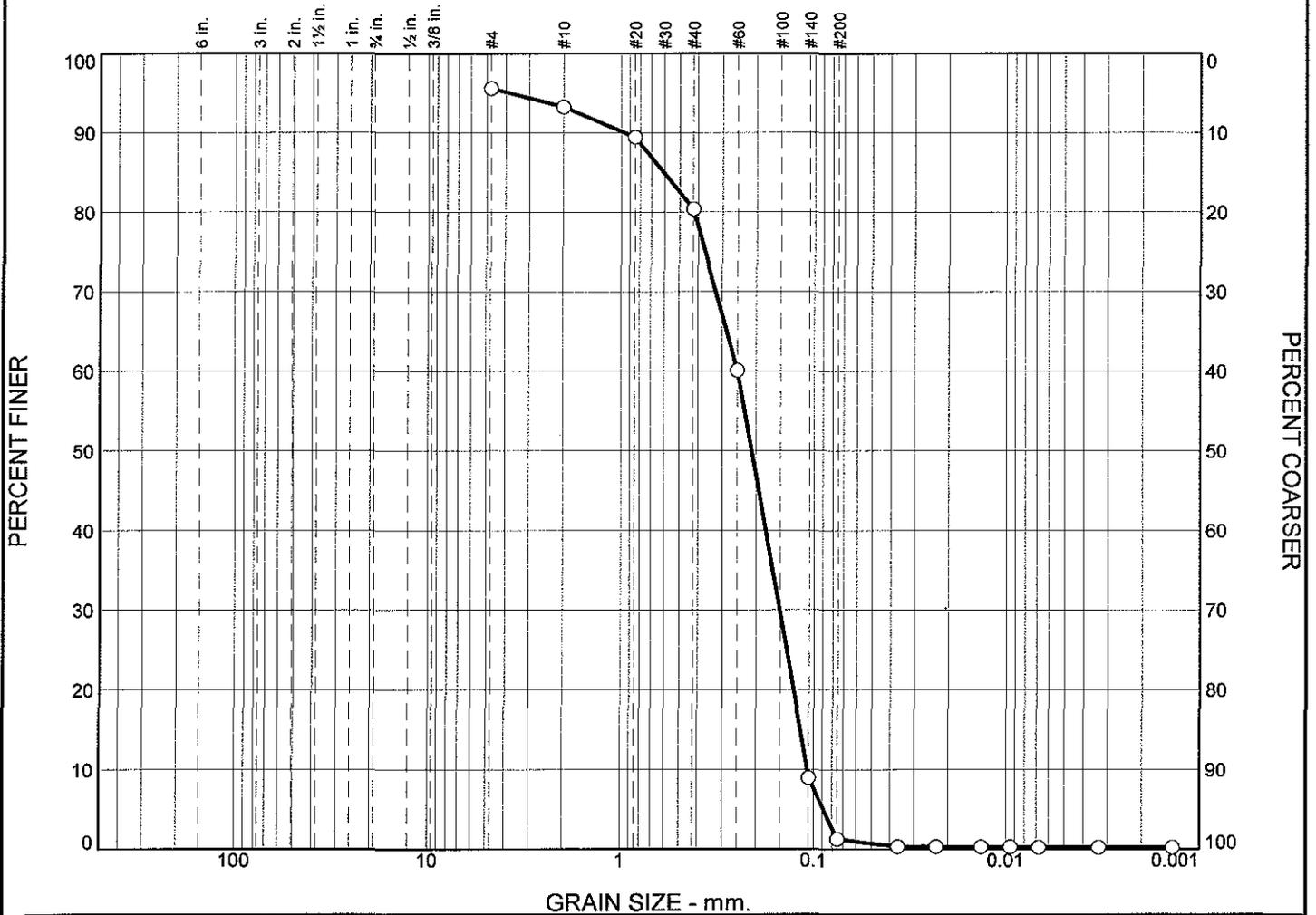
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.1      | 2.5     | 7.0  | 18.4 | 37.8 | 19.8    | 85.5  | 5.8  | 0.2  | 0.2  | 0.1     | 6.3   | 2.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0730          | 0.0902          | 0.1077          | 0.1294          | 0.1868          | 0.2245          | 0.3945          | 0.5302          | 0.7989          | 4.1792          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.23             | 3.07           | 1.02           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | Granules        | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |          |         |                 | 1.8             | 3.1             | 7.7             | 22.4            | 41.3            | 17.8           | 0.7            | 0.0  | 0.0  | 0.1     | 0.2    |
| ⊗ | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |          |         | 0.6048          | 0.2497          | 0.2111          | 0.1509          | 0.1173          | 0.1079          | 0.85           | 2.31           |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502226    <b>Sample Number:</b> L0912910-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912910  
 Location: 502226  
 Sample Number: L0912910-09  
 USCS Classification: SP  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 50.91  
 Tare Wt. = 4.06  
 Minus #200 from wash = 9.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 52.02                       | 0.00         | #4                 | 521.45                  | 519.16               | 95.6          | 4.4              |
|                             |              | #10                | 461.13                  | 459.91               | 93.3          | 6.7              |
|                             |              | #20                | 377.16                  | 375.18               | 89.4          | 10.6             |
|                             |              | #40                | 371.19                  | 366.48               | 80.4          | 19.6             |
|                             |              | #60                | 377.55                  | 366.98               | 60.1          | 39.9             |
|                             |              | #140               | 370.78                  | 344.18               | 8.9           | 91.1             |
|                             |              | #200               | 350.55                  | 346.56               | 1.3           | 98.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 1.3  
 Weight of hydrometer sample = 52.02  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.3           | 99.7             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 0.3           | 99.7             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.3           | 99.7             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.3           | 99.7             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 0.2           | 99.8             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 0.2           | 99.8             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 0.2           | 99.8             |

## Fractional Components

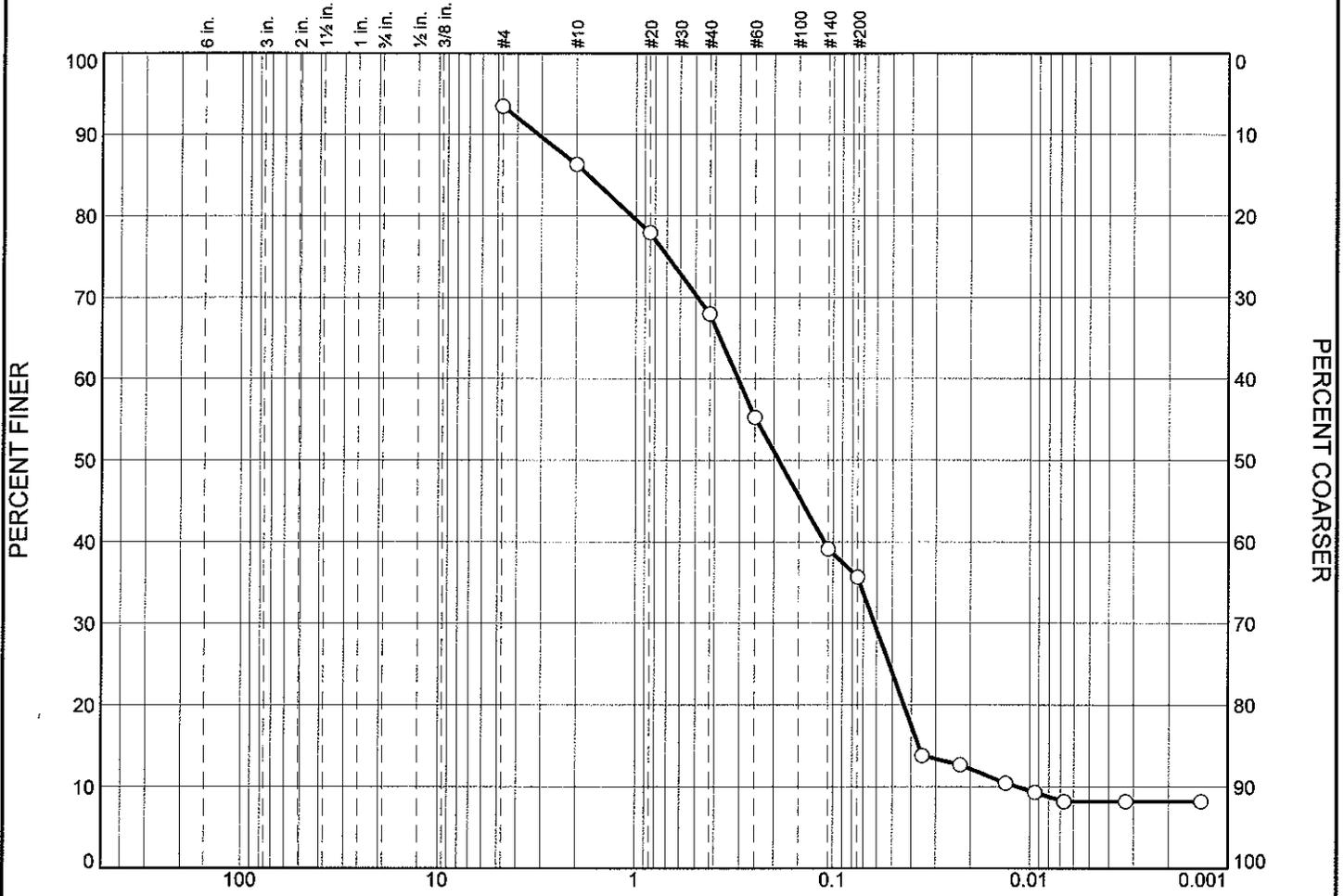
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.8      | 3.1     | 7.7  | 22.4 | 41.3 | 17.8    | 92.3  | 0.7  | 0.0  | 0.0  | 0.1     | 0.8   | 0.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1079          | 0.1173          | 0.1276          | 0.1509          | 0.2111          | 0.2497          | 0.4207          | 0.6048          | 0.9627          | 3.8100          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.38             | 2.31           | 0.85           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 5.7             | 6.8             | 9.2             | 15.1            | 13.0            | 11.8           | 16.9           | 2.4  | 2.4  | 0.5    | 8.2     |
|   |            |           |                 |                 |                 |                 |                 |                 |                |                |      |      |        |         |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 1.7515          | 0.3050          | 0.1891          | 0.0616          | 0.0366          | 0.0116          | 1.07           | 26.19          |      |      |        |         |
|   |            |           |                 |                 |                 |                 |                 |                 |                |                |      |      |        |         |

|   | USCS | AASHTO |
|---|------|--------|
| ○ |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502311    <b>Sample Number:</b> L0912910-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912910  
 Location: 502311  
 Sample Number: L0912910-10  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 36.98  
 Tare Wt. = 4.11  
 Minus #200 from wash = 35.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.65                       | 0.00         | #4                 | 525.19                  | 521.87               | 93.4          | 6.6              |
|                             |              | #10                | 488.48                  | 484.86               | 86.3          | 13.7             |
|                             |              | #20                | 409.75                  | 405.51               | 77.9          | 22.1             |
|                             |              | #40                | 364.31                  | 359.25               | 67.9          | 32.1             |
|                             |              | #60                | 372.65                  | 366.22               | 55.2          | 44.8             |
|                             |              | #140               | 351.04                  | 342.88               | 39.1          | 60.9             |
|                             |              | #200               | 346.67                  | 344.91               | 35.7          | 64.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 35.7  
 Weight of hydrometer sample = 50.65  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 13.8          | 86.2             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 12.7          | 87.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 10.4          | 89.6             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 9.3           | 90.7             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 8.2           | 91.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 8.2           | 91.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 8.2           | 91.8             |

## Fractional Components

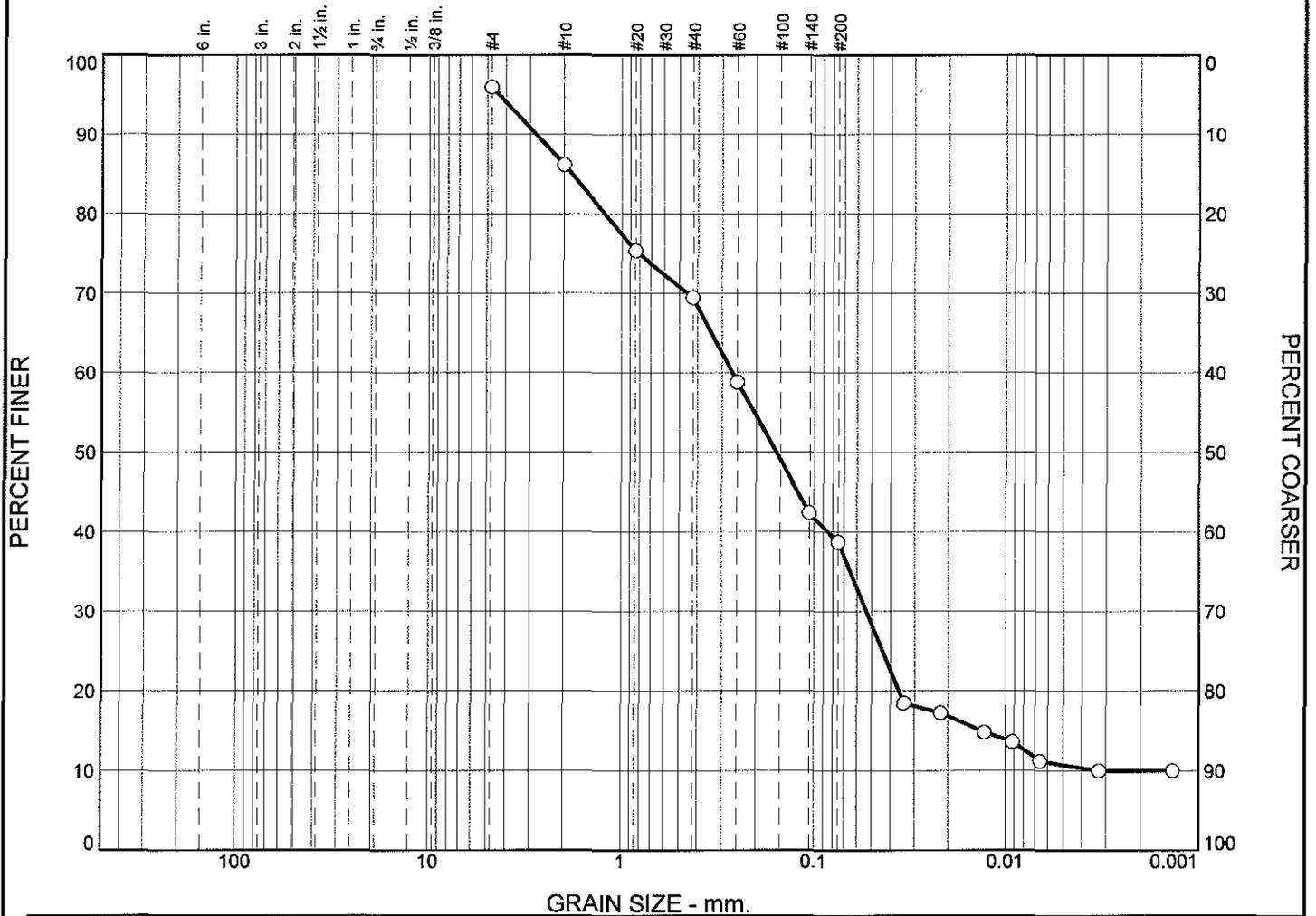
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.7      | 6.8     | 9.2  | 15.1 | 13.0 | 11.8    | 55.9  | 16.9 | 2.4  | 2.4  | 0.5     | 22.2  | 8.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0116          | 0.0366          | 0.0435          | 0.0616          | 0.1891          | 0.3050          | 1.0506          | 1.7515          | 3.1305          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.60             | 26.19          | 1.07           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 7.8             | 8.8     | 6.6             | 12.0 | 13.3            | 11.5    | 15.8            | 2.5  | 3.3             | 2.1     | 10.3           |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 1.8224          |   | 0.2651          |         | 0.1578          |      | 0.0534          |         | 0.0133          |      | 0.0033          |         | 3.25           |  | 79.92          |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502312    <b>Sample Number:</b> L0912910-11</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502312

Sample Number: L0912910-11

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.17  
 Tare Wt. = 4.07  
 Minus #200 from wash = 62.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.22                       | 0.00         | #4                 | 521.23                  | 519.16               | 96.0          | 4.0              |
|                             |              | #10                | 464.92                  | 459.91               | 86.2          | 13.8             |
|                             |              | #20                | 380.55                  | 375.00               | 75.3          | 24.7             |
|                             |              | #40                | 370.00                  | 366.98               | 69.4          | 30.6             |
|                             |              | #60                | 372.42                  | 366.98               | 58.8          | 41.2             |
|                             |              | #140               | 352.61                  | 344.18               | 42.4          | 57.6             |
|                             |              | #200               | 348.43                  | 346.56               | 38.7          | 61.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 38.7

Weight of hydrometer sample = 51.22

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 18.5          | 81.5             |
| 5.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0218         | 17.3          | 82.7             |
| 15.00               | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0128         | 14.8          | 85.2             |
| 30.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0092         | 13.6          | 86.4             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 11.2          | 88.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 10.0          | 90.0             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 10.0          | 90.0             |

## Fractional Components

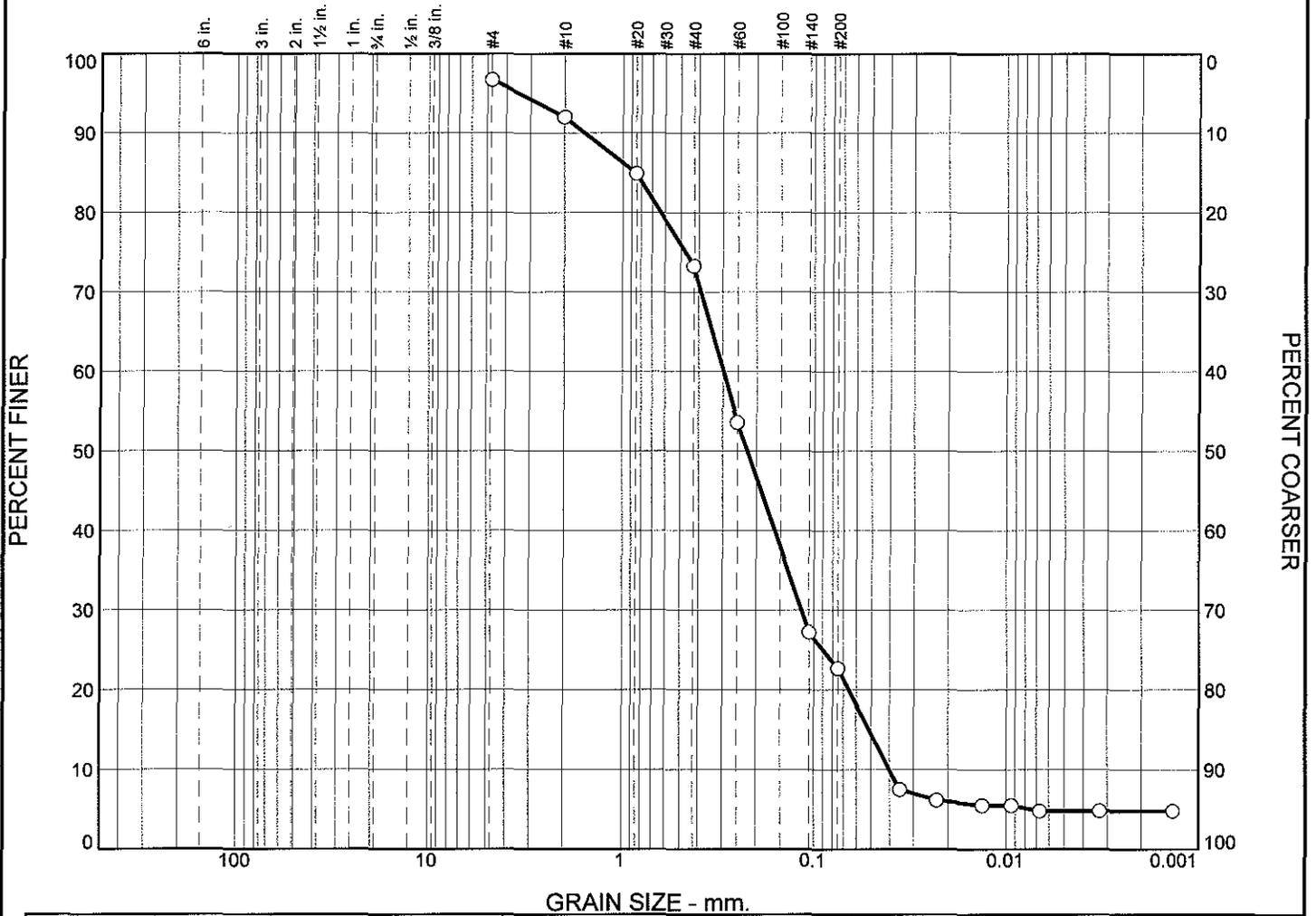
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.8      | 8.8     | 6.6  | 12.0 | 13.3 | 11.5    | 52.2  | 15.8 | 2.5  | 3.3  | 2.1     | 23.7  | 10.3 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0033          | 0.0133          | 0.0362          | 0.0534          | 0.1578          | 0.2651          | 1.2279          | 1.8224          | 2.8044          | 4.3639          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.53             | 79.92          | 3.25           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | % Sand  |      |      |      | % Silt  |      |      |      | % Clay |         |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|--------|---------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○ |          |         |         | 3.8      | 5.8     | 10.2 | 22.4 | 21.3 | 13.3    | 11.9 | 1.4  | 0.6  | 0.3    | 4.8     |

| × | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|---|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○ |    |    | 0.8606 | 0.2973 | 0.2226 | 0.1161 | 0.0514 | 0.0401 | 1.13 | 7.41 |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502313    <b>Sample Number:</b> L0912910-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502313

Sample Number: L0912910-12

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 46.93

Tare Wt. = 4.04

Minus #200 from wash = 21.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 54.56                       | 0.00         | #4                 | 523.65                  | 521.87               | 96.7          | 3.3              |
|                             |              | #10                | 487.44                  | 484.86               | 92.0          | 8.0              |
|                             |              | #20                | 409.39                  | 405.51               | 84.9          | 15.1             |
|                             |              | #40                | 365.60                  | 359.25               | 73.3          | 26.7             |
|                             |              | #60                | 376.96                  | 366.22               | 53.6          | 46.4             |
|                             |              | #140               | 357.27                  | 342.88               | 27.2          | 72.8             |
|                             |              | #200               | 347.38                  | 344.91               | 22.7          | 77.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 22.7

Weight of hydrometer sample = 54.56

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 7.5           | 92.5             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 6.1           | 93.9             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 5.5           | 94.5             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 5.5           | 94.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 4.8           | 95.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 4.8           | 95.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 4.8           | 95.2             |

## Fractional Components

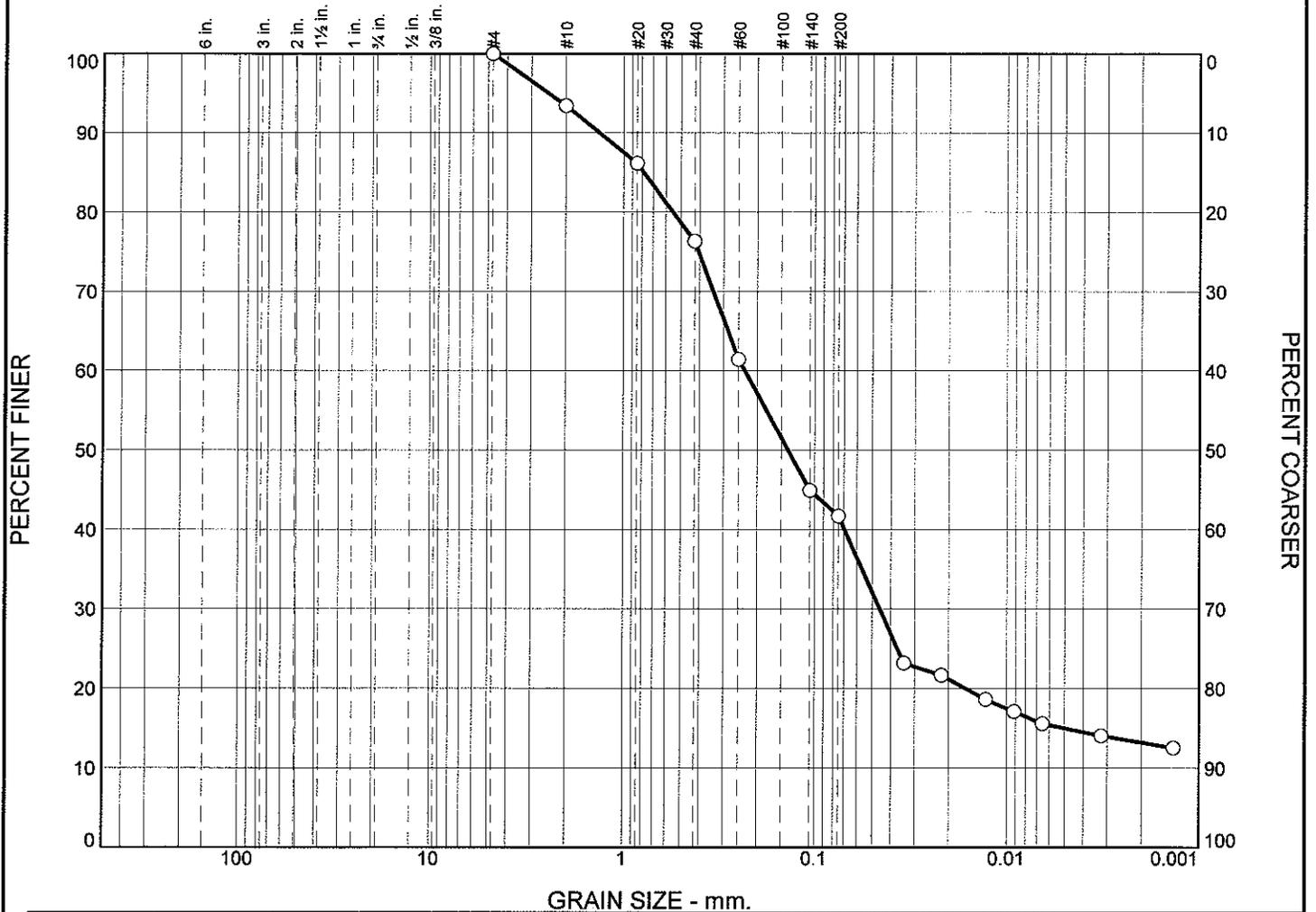
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Sift |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.8      | 5.8     | 10.2 | 22.4 | 21.3 | 13.3    | 73.0  | 11.9 | 1.4  | 0.6  | 0.3     | 14.2  | 4.8  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0401 | 0.0514 | 0.0657 | 0.1161 | 0.2226 | 0.2973 | 0.6350 | 0.8606 | 1.5706 | 3.4567 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.45             | 7.41           | 1.13           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       |                 | % Sand          |                 |                 |                 |                | % Silt         |      |      |      | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|------|--------|
|   |            |           |                 |                 | % Gravel        | V. Crs.         | Crs.            | Med.            | Fine           | V. Fine        | Crs. | Med. | Fine |        |
| ○ | 0.0        | 0.0       | 1.3             | 5.3             | 5.9             | 8.9             | 17.2            | 13.3            | 10.7           | 14.6           | 3.1  | 3.3  | 2.0  | 14.4   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |      |        |
| ○ |            |           | 0.7840          | 0.2320          | 0.1380          | 0.0456          | 0.0050          |                 |                |                |      |      |      |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912910 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 502326 <b>Sample Number:</b> L0912910-13 | <b>Remarks:</b><br><br><br> |
|--|-----------------------------|

|   |               |
|---|---------------|
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b> | <b>Figure</b> |
|---|---------------|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502326

Sample Number: L0912910-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 27.48  
 Tare Wt. = 4.02  
 Minus #200 from wash = 46.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.96                       | 0.00         | #4                 | 519.16                  | 519.16               | 100.0         | 0.0              |
|                             |              | #10                | 462.80                  | 459.91               | 93.4          | 6.6              |
|                             |              | #20                | 378.38                  | 375.18               | 86.1          | 13.9             |
|                             |              | #40                | 370.80                  | 366.48               | 76.3          | 23.7             |
|                             |              | #60                | 373.52                  | 366.98               | 61.4          | 38.6             |
|                             |              | #140               | 351.44                  | 344.18               | 44.9          | 55.1             |
|                             |              | #200               | 347.98                  | 346.56               | 41.7          | 58.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 41.7

Weight of hydrometer sample = 43.96

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times Rm$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 23.2          | 76.8             |
| 5.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0218         | 21.7          | 78.3             |
| 15.00               | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0128         | 18.6          | 81.4             |
| 30.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0092         | 17.1          | 82.9             |
| 60.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0065         | 15.6          | 84.4             |
| 250.00              | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0032         | 14.0          | 86.0             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 12.5          | 87.5             |

## Fractional Components

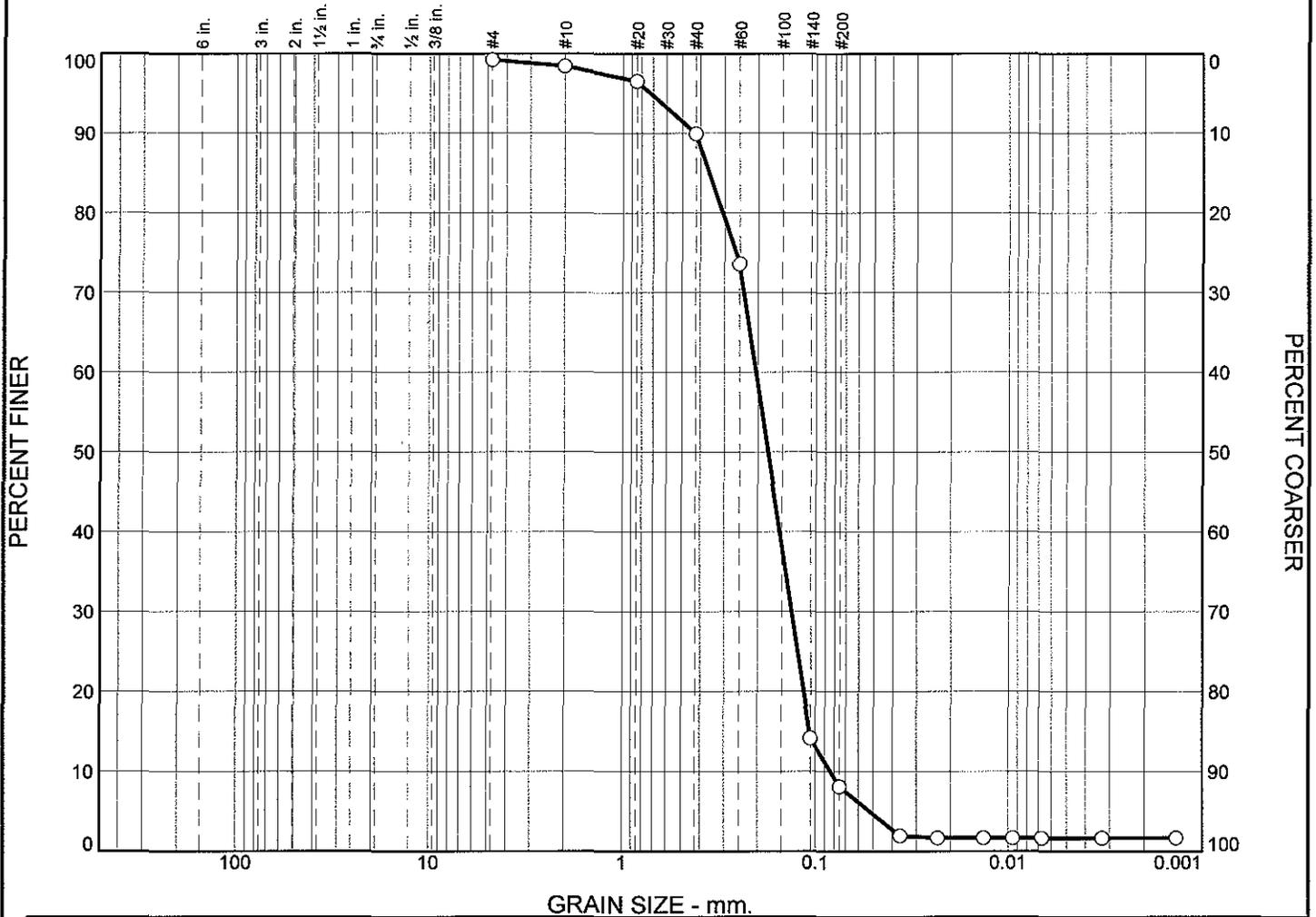
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 1.3     | 5.3      | 5.9     | 8.9  | 17.2 | 13.3 | 10.7    | 56.0  | 14.6 | 3.1  | 3.3  | 2.0     | 23.0  | 14.4 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0050 | 0.0163 | 0.0456 | 0.1380 | 0.2320 | 0.5510 | 0.7840 | 1.3370 | 2.4603 |

| Fineness Modulus |
|------------------|
| 1.17             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      | Silt    |      |      |      | Clay |         |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|------|---------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |      | V. Fine |
| ○ |          |         |         | 0.7      | 1.5     | 5.4  | 17.9 | 48.0 | 19.1    | 4.7  | 0.1  | 0.0  | 0.0  | 1.7     |

| × | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.3621          | 0.2055          | 0.1779          | 0.1332          | 0.1073          | 0.0836          | 1.03           | 2.46           |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502411    <b>Sample Number:</b> L0912910-14</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502411

Sample Number: L0912910-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 55.37  
 Tare Wt. = 4.04  
 Minus #200 from wash = 7.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.55                       | 0.00         | #4                 | 522.30                  | 521.87               | 99.2          | 0.8              |
|                             |              | #10                | 485.30                  | 484.86               | 98.4          | 1.6              |
|                             |              | #20                | 406.56                  | 405.51               | 96.5          | 3.5              |
|                             |              | #40                | 362.92                  | 359.25               | 89.9          | 10.1             |
|                             |              | #60                | 375.31                  | 366.22               | 73.6          | 26.4             |
|                             |              | #140               | 375.88                  | 342.88               | 14.2          | 85.8             |
|                             |              | #200               | 348.29                  | 344.91               | 8.1           | 91.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 8.1

Weight of hydrometer sample = 55.55

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 1.9           | 98.1             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 1.7           | 98.3             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 1.7           | 98.3             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 1.7           | 98.3             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.7           | 98.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.7           | 98.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.7           | 98.3             |

## Fractional Components

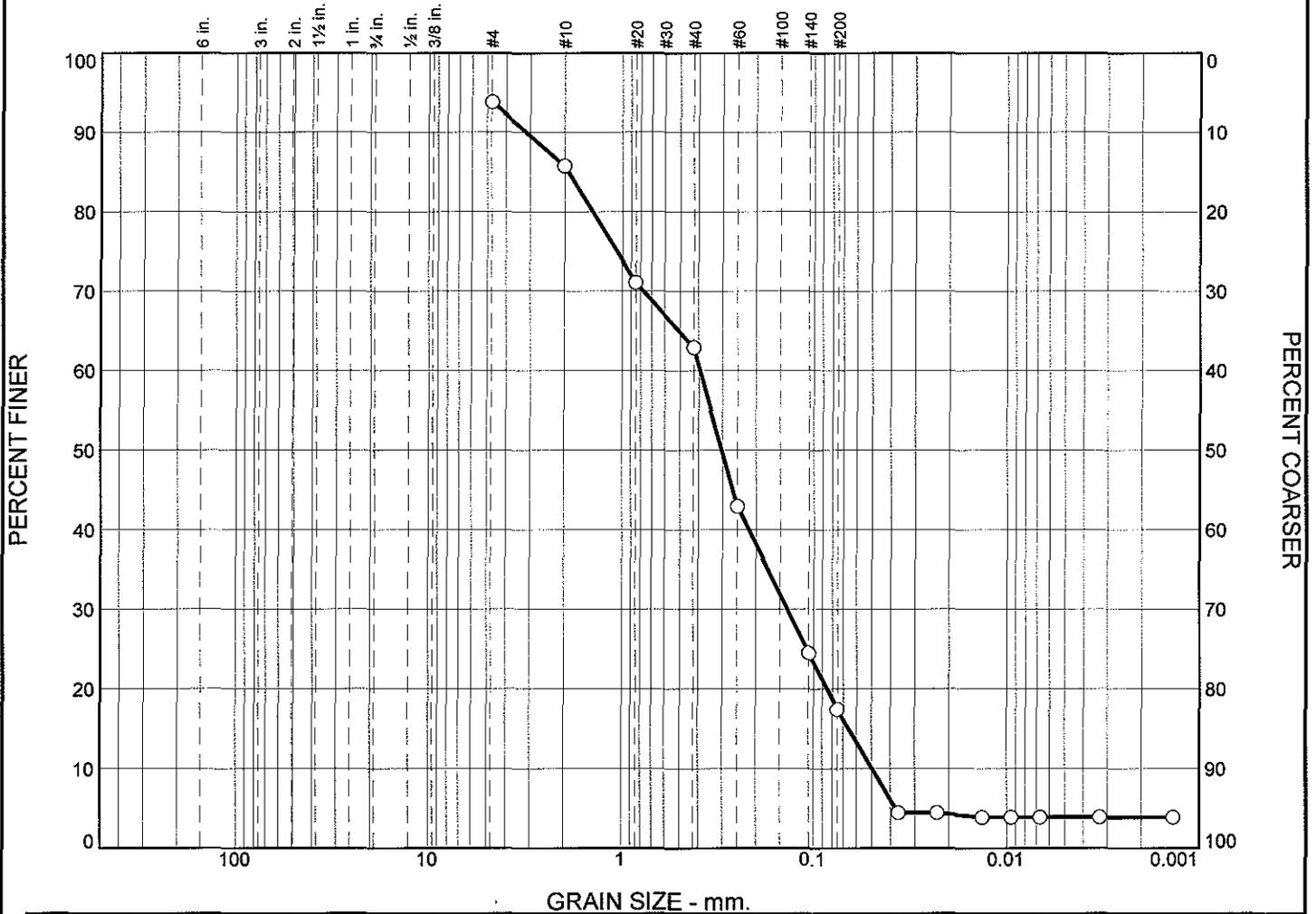
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.7      | 1.5     | 5.4  | 17.9 | 48.0 | 19.1    | 91.9  | 4.7  | 0.1  | 0.0  | 0.0     | 4.8   | 1.7  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0836 | 0.1073 | 0.1153 | 0.1332 | 0.1779 | 0.2055 | 0.3079 | 0.3621 | 0.4278 | 0.7229 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.94             | 2.46           | 1.03           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 6.4             | 11.9            | 9.1             | 21.9            | 14.9            | 13.9           | 9.7            | 0.4  | 0.1  | 0.0    | 3.9     |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 1.9139          | 0.3935          | 0.3018          | 0.1370          | 0.0656          | 0.0497          | 0.96           | 7.92           |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502412    <b>Sample Number:</b> L0912910-15</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502412

Sample Number: L0912910-15

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 50.33  
 Tare Wt. = 4.06  
 Minus #200 from wash = 10.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.81                       | 0.00         | #4                 | 522.36                  | 519.16               | 93.8          | 6.2              |
|                             |              | #10                | 464.09                  | 459.91               | 85.8          | 14.2             |
|                             |              | #20                | 382.79                  | 375.18               | 71.1          | 28.9             |
|                             |              | #40                | 370.71                  | 366.48               | 62.9          | 37.1             |
|                             |              | #60                | 377.34                  | 366.98               | 42.9          | 57.1             |
|                             |              | #140               | 353.72                  | 344.18               | 24.5          | 75.5             |
|                             |              | #200               | 350.23                  | 346.56               | 17.4          | 82.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 17.4  
 Weight of hydrometer sample = 51.81  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 4.4           | 95.6             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 4.4           | 95.6             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 3.9           | 96.1             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 3.9           | 96.1             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 3.9           | 96.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 3.9           | 96.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 3.9           | 96.1             |

## Fractional Components

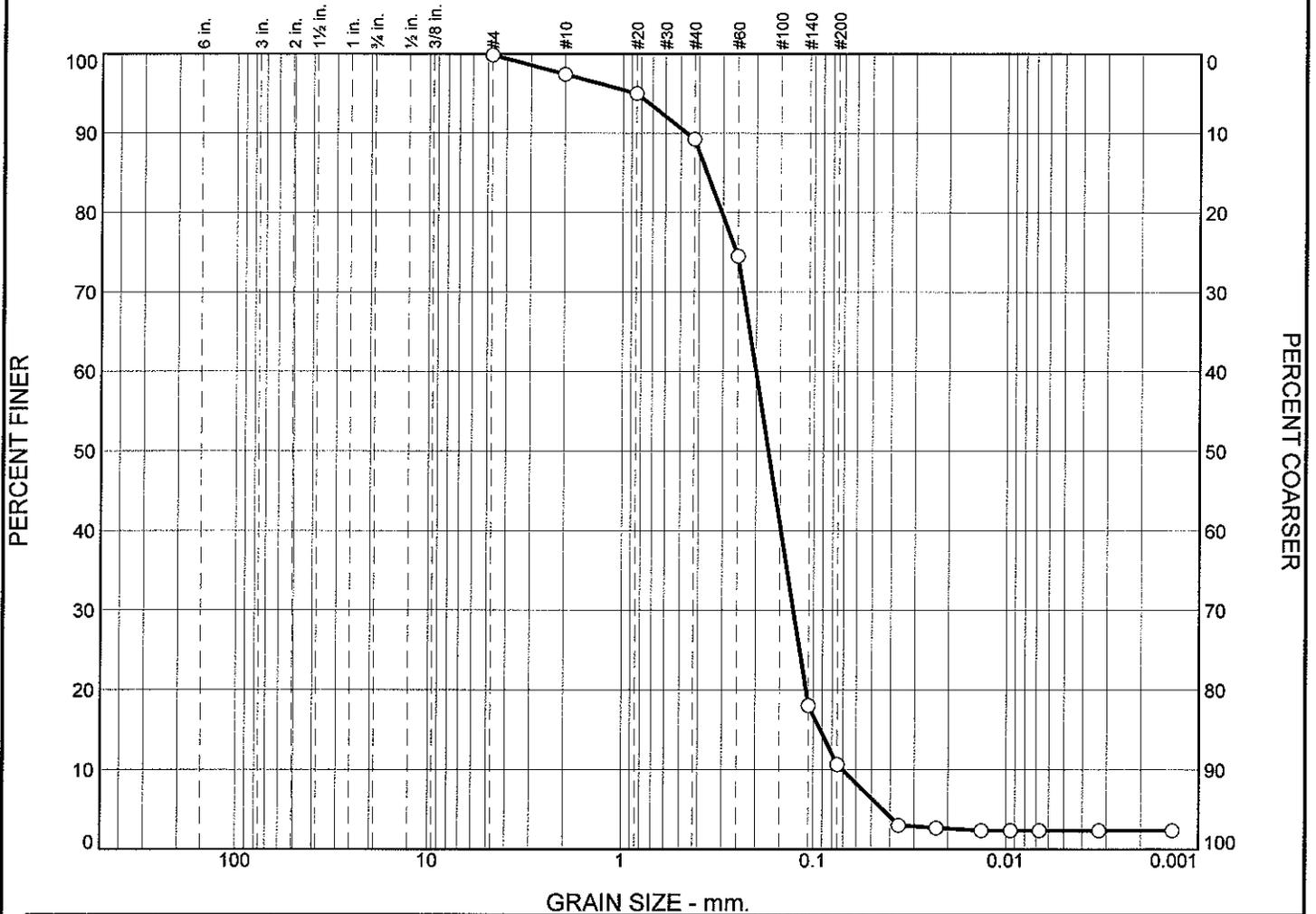
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.4      | 11.9    | 9.1  | 21.9 | 14.9 | 13.9    | 71.7  | 9.7  | 0.4  | 0.1  | 0.0     | 10.2  | 3.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0497          | 0.0656          | 0.0851          | 0.1370          | 0.3018          | 0.3935          | 1.4303          | 1.9139          | 3.1525          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.93             | 7.92           | 0.96           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       |                 | % Sand          |                 |                 |                 |                | % Silt         |      |      |      | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|------|--------|
|   |            |           |                 |                 | % Granules      | V. Crs.         | Crs.            | Med.            | Fine           | V. Fine        | Crs. | Med. | Fine |        |
| ○ |            |           |                 |                 | 2.0             | 1.9             | 4.9             | 16.1            | 45.6           | 20.2           | 5.8  | 0.4  | 0.1  | 2.4    |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |      |        |
| ○ |            |           | 0.3646          | 0.2005          | 0.1723          | 0.1271          | 0.0920          | 0.0706          | 1.14           | 2.84           |      |      |      |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912910    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502413    <b>Sample Number:</b> L0912910-16</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502413

Sample Number: L0912910-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 50.67  
 Tare Wt. = 4.02  
 Minus #200 from wash = 9.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.39                       | 0.00         | #4                 | 521.95                  | 521.87               | 99.8          | 0.2              |
|                             |              | #10                | 486.11                  | 484.86               | 97.4          | 2.6              |
|                             |              | #20                | 406.75                  | 405.51               | 95.0          | 5.0              |
|                             |              | #40                | 362.20                  | 359.25               | 89.3          | 10.7             |
|                             |              | #60                | 373.80                  | 366.22               | 74.5          | 25.5             |
|                             |              | #140               | 371.90                  | 342.88               | 18.0          | 82.0             |
|                             |              | #200               | 348.72                  | 344.91               | 10.6          | 89.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 10.6

Weight of hydrometer sample = 51.75

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 3.0           | 97.0             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 2.7           | 97.3             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 2.4           | 97.6             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 2.4           | 97.6             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 2.4           | 97.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 2.4           | 97.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.4           | 97.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.0      | 1.9     | 4.9  | 16.1 | 45.6 | 20.2    | 88.7  | 5.8  | 0.4  | 0.1  |         | 6.3   | 2.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0706          | 0.0920          | 0.1092          | 0.1271          | 0.1723          | 0.2005          | 0.3046          | 0.3646          | 0.4648          | 0.8503          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.94             | 2.84           | 1.14           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912910

Location: 502426

Sample Number: L0912910-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 51.36  
 Tare Wt. = 4.04  
 Minus #200 from wash = 8.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.75                       | 0.00         | #4                 | 522.82                  | 519.16               | 92.9          | 7.1              |
|                             |              | #10                | 463.49                  | 459.91               | 86.0          | 14.0             |
|                             |              | #20                | 380.18                  | 375.18               | 76.3          | 23.7             |
|                             |              | #40                | 369.48                  | 366.48               | 70.6          | 29.4             |
|                             |              | #60                | 369.95                  | 366.98               | 64.8          | 35.2             |
|                             |              | #140               | 345.36                  | 344.18               | 62.5          | 37.5             |
|                             |              | #200               | 349.49                  | 346.53               | 56.8          | 43.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 56.8

Weight of hydrometer sample = 51.75

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 14.5          | 85.5             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 14.5          | 85.5             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 12.7          | 87.3             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 12.7          | 87.3             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 12.7          | 87.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 12.7          | 87.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 12.7          | 87.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 5.6      | 7.8     | 6.3  | 7.1  | 1.8  | 16.9    | 39.9  | 31.6 | 1.3  | 0.5  |         | 33.4 | 12.7  |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|-----|
|     | 0.0368 | 0.0400 | 0.0475 | 0.0668 | 0.0910 | 1.1746 | 1.8289 | 3.2940 |     |

| Fineness Modulus |
|------------------|
| 1.36             |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

### **New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. **NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

*Air* (Organic Parameters: EPA TO-15)

**U.S. Army Corps of Engineers**

**Department of Defense** Certificate/Lab ID: L2217.01.

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.



Serial No: 08031016:16



# CHAIN OF CUSTODY

PAGE OF

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd In Lab:

ALPHA Job #: 20912910

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 6                              | 502211    | 9/22/09    | 15:02 | SE            | HC                 |
| 7                              | 502212    | 9/22/09    | 15:02 | SE            | HC                 |
| 8                              | 502213    | 9/22/09    | 15:02 | SE            | HC                 |
|                                | 502225    | 9/22/09    | 15:30 | SE            | HC                 |
| 9                              | 502226    | 9/22/09    | 15:30 | SE            | HC                 |
|                                | 502227    | 9/22/09    | 15:30 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                     |               |                     |               |
|---------------------|---------------|---------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
| <i>Paul Gilbert</i> | 9/22 18:56    | <i>Paul Gilbert</i> | 9/22 18:55    |
| <i>Paul Gilbert</i> | 9/22/09 07:15 | <i>Paul Gilbert</i> | 9/22/09 9:15  |
| <i>Paul Gilbert</i> | 9/22/09 10:25 | <i>Paul Gilbert</i> | 9/23/09 10:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

PAGE 5 OF 12

Date Rec'd in Lab:

ALPHA Job #: 10918910

Serial No.: 08031016:16



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18 | TOC | grain size | archive |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|-----|------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below).

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 10                             | 502311    | 9/23/09    | 17:06 | SE            | HC                 |
| 11                             | 502312    | 9/23/09    | 17:06 | SE            | HC                 |
| 12                             | 502313    | 9/23/09    | 17:05 | SE            | HC                 |
|                                | 502325    | 9/23/09    | 17:02 | SE            | HC                 |
| 13                             | 502326    | 9/23/09    | 17:13 | SE            | HC                 |
|                                | 502327    | 9/23/09    | 17:13 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |                    |
|--------------------|---------------|--------------------|--------------------|
| Reinquished By:    | Date/Time     | Received By:       | Date/Time          |
| <i>[Signature]</i> | 9-23-09 18:40 | <i>[Signature]</i> | 9/23/09            |
| <i>[Signature]</i> | 9/24/09 9:00  | <i>[Signature]</i> | 9/24/09 9:20/18:53 |
| <i>[Signature]</i> | 9/24/09 11:00 | <i>[Signature]</i> | 9/24/09 11:00      |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Serial No: 08031016:16



# CHAIN OF CUSTODY

PAGE OF

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Welshar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #:

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client Info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 14                             | 502411    | 9/22/09    | 17:18 | SE            | HC                 |
| 15                             | 502412    | 9/22/09    | 17:18 | SE            | HC                 |
| 16                             | 502413    | 9/22/09    | 17:18 | SE            | HC                 |
|                                | 502425    | 9/22/09    | 17:38 | SE            | HC                 |
| 17                             | 502426    | 9/22/09    | 17:38 | SE            | HC                 |
|                                | 502427    | 9/22/09    | 17:38 | SE            | HC                 |
|                                |           | 9/22/09    |       |               |                    |
|                                |           | 9/22/09    |       |               |                    |
|                                |           | 9/22/09    |       |               |                    |
|                                |           | 9/22/09    |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

|                     |               |                     |               |
|---------------------|---------------|---------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
| <i>Paul Dilbert</i> | 9/22 18:56    | <i>Paul Dilbert</i> | 9/22 18:55    |
| <i>Paul Dilbert</i> | 9/23/09 10:25 | <i>Paul Dilbert</i> | 9/22/09 9:15  |
|                     |               | <i>Paul Dilbert</i> | 9/23/09 10:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912911  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Phone:          | (508) 540-8080  |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 08/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912911-01                | 502511           | NEW BEDFORD, MA            | 09/22/09 13:00                  |
| L0912911-02                | 502512           | NEW BEDFORD, MA            | 09/22/09 13:30                  |
| L0912911-03                | 502513           | NEW BEDFORD, MA            | 09/22/09 13:32                  |
| L0912911-04                | 502526           | NEW BEDFORD, MA            | 09/22/09 13:48                  |
| L0912911-05                | 502611           | NEW BEDFORD, MA            | 09/27/09 08:02                  |
| L0912911-06                | 502612           | NEW BEDFORD, MA            | 09/27/09 08:10                  |
| L0912911-07                | 502613           | NEW BEDFORD, MA            | 09/27/09 08:17                  |
| L0912911-08                | 502626           | NEW BEDFORD, MA            | 09/27/09 08:23                  |
| L0912911-09                | 502711           | NEW BEDFORD, MA            | 09/22/09 11:56                  |
| L0912911-10                | 502712           | NEW BEDFORD, MA            | 09/22/09 11:56                  |
| L0912911-11                | 502713           | NEW BEDFORD, MA            | 09/22/09 11:56                  |
| L0912911-12                | 502726           | NEW BEDFORD, MA            | 09/22/09 11:56                  |
| L0912911-13                | 502811           | NEW BEDFORD, MA            | 09/23/09 17:21                  |
| L0912911-14                | 502812           | NEW BEDFORD, MA            | 09/23/09 17:21                  |
| L0912911-15                | 502813           | NEW BEDFORD, MA            | 09/23/09 17:21                  |
| L0912911-16                | 502826           | NEW BEDFORD, MA            | 09/23/09 17:30                  |
| L0912911-17                | 502911           | NEW BEDFORD, MA            | 09/27/09 14:12                  |
| L0912911-18                | 502912           | NEW BEDFORD, MA            | 09/27/09 14:20                  |
| L0912911-19                | 502913           | NEW BEDFORD, MA            | 09/27/09 14:25                  |
| L0912911-20                | 502926           | NEW BEDFORD, MA            | 09/27/09 14:38                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on February 2, 2010. The report was ammended to include revised Grain Size data.

### Grain Size

The WG382946-1 Laboratory Duplicate RPD is outside the acceptance criteria for gravel (133%), % very coarse sand (152%), % coarse sand (123%), % fine sand (169%),% very fine sand (168%),silt (182%),clay (178%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**Case Narrative (continued)**

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Peter Henriksen

Title: Technical Director/Representative

Date: 08/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-01  
**Client ID:** 502511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 13:00  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 14.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 34.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 9.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-02  
**Client ID:** 502512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 13:30  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 12.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 38.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-03  
**Client ID:** 502513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 13:32  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 14.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 14.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 29.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-04  
**Client ID:** 502526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 13:48  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 57.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-05  
**Client ID:** 502611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:02  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 12.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 22.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 28.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 2.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-06  
**Client ID:** 502612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:10  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 11.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 13.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 24.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 24.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-07  
**Client ID:** 502613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:17  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 8.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 11.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 24.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 34.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 2.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-08  
**Client ID:** 502626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:23  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 9.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 21.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 31.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 3.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 2.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.600  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-09  
**Client ID:** 502711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 11:56  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 31.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 31.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-10  
**Client ID:** 502712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 11:56  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 27.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 34.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-11  
**Client ID:** 502713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 11:56  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 30.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 33.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 5.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-12  
**Client ID:** 502726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 11:56  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 25.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 6.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-13  
**Client ID:** 502811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:21  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 18.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 29.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 28.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912911-14  
**Client ID:** 502812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:21  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 12.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 16.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 27.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 27.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 2.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-15  
**Client ID:** 502813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:21  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 21.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 31.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 26.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 1.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-16  
**Client ID:** 502826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:30  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 23.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 34.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 28.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.200  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-17  
**Client ID:** 502911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 14:12  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 21.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-18  
**Client ID:** 502912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 14:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 10.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 22.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 29.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-19  
**Client ID:** 502913  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 14:25  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 15.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 24.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 22.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912911-20  
**Client ID:** 502926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 14:38  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 12.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 23.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912911

Report Date: 08/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG382946-1 QC Sample: L0912911-12 Client ID: 502726 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 1.5           | 7.40             | %     | 133 | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 2.9           | 21.1             | %     | 152 | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 8.2           | 34.2             | %     | 123 | Q    | 20         |
| Medium Sand (0.25-0.50 mm)   | 25.8          | 29.5             | %     | 13  |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 25.2          | 2.10             | %     | 169 | Q    | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 10.5          | 0.900            | %     | 168 | Q    | 20         |
| Silt - (1.95-62.5 um)  | 6.5           | 0.300            | %     | 182 | Q    | 20         |
| Clay - (<1.95 um)  | 1.7           | 0.100            | %     | 178 | Q    | 20         |

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## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

## Cooler Information Custody Seal

## Cooler

|   |        |
|---|--------|
| A | Absent |
| C | Absent |
| B | Absent |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-01A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-02A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-03A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-04A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-05A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-06A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-07A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-08A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-09A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-10A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-11A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-12A | Glass 250ml unpreserved | B      | N/A | 4.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-13A | Glass 250ml unpreserved | A      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-14A | Glass 250ml unpreserved | A      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-15A | Glass 250ml unpreserved | A      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-16A | Glass 250ml unpreserved | A      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-17A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-18A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912911-19A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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Lab Number: L0912911

Report Date: 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912911-20A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NI** - Not Ignitable.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.

**Report Format:** Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

*Data Qualifiers*

- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912911  
**Report Date:** 08/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

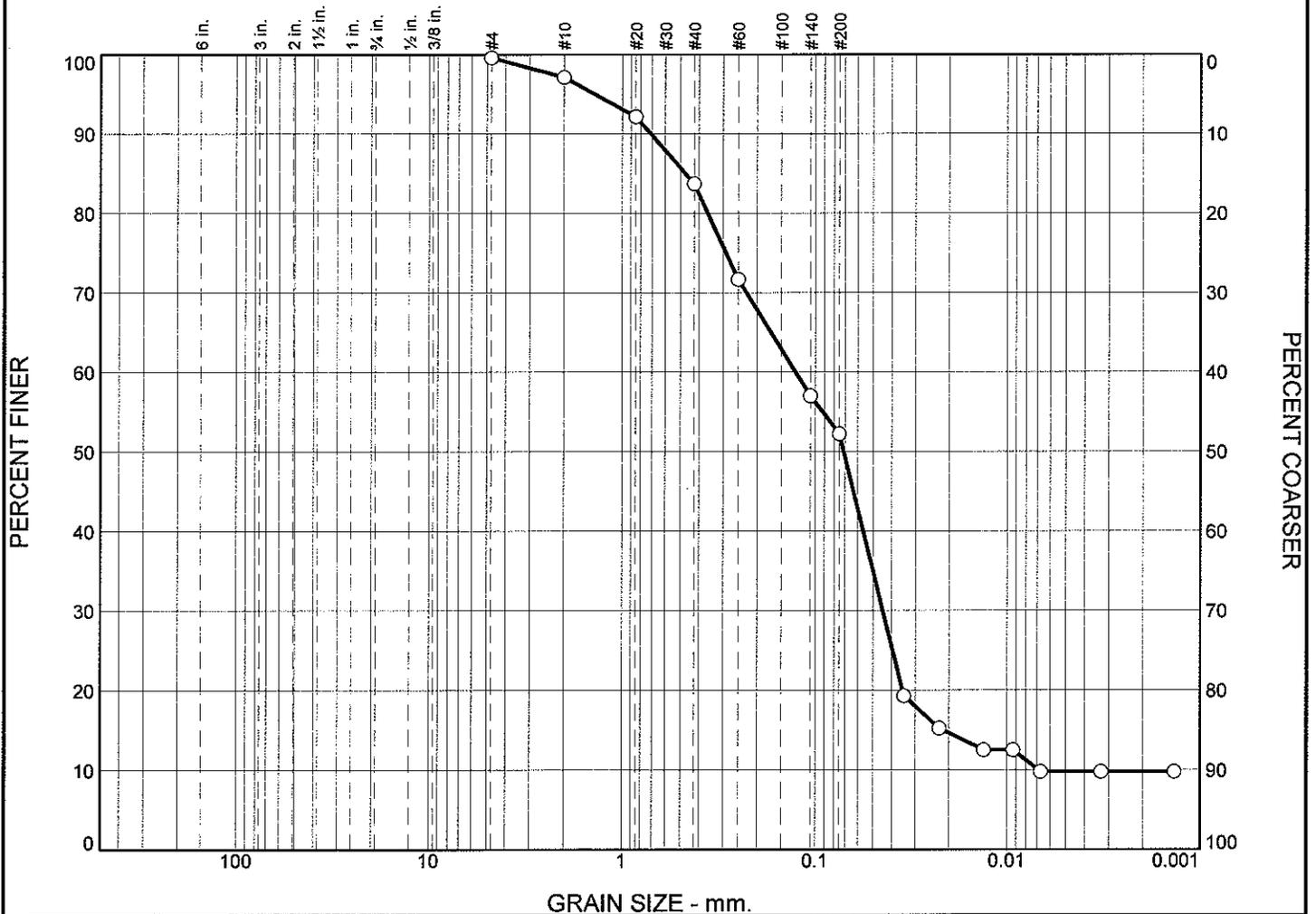
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# ASTM D422-63

## Wet Sieve Hydrometer

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 2.0             | 4.0     | 7.4             | 14.1 | 11.8            | 15.3    | 26.2            | 4.9  | 2.4             | 1.2     | 9.8            |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.4731          |   | 0.1265          |         | 0.0712          |      | 0.0444          |         | 0.0215          |      | 0.0069          |         | 2.26           |  | 18.37          |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502511    <b>Sample Number:</b> L0912911-01</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502511

Sample Number: L0912911-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 61.81                       | 0.00         | #4                 | 521.13                  | 520.87               | 99.6          | 0.4              |
|                             |              | #10                | 483.60                  | 482.08               | 97.1          | 2.9              |
|                             |              | #20                | 414.14                  | 411.07               | 92.2          | 7.8              |
|                             |              | #40                | 383.06                  | 377.83               | 83.7          | 16.3             |
|                             |              | #60                | 377.31                  | 369.86               | 71.6          | 28.4             |
|                             |              | #140               | 356.26                  | 347.20               | 57.0          | 43.0             |
|                             |              | #200               | 349.46                  | 346.51               | 52.2          | 47.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 52.2

Weight of hydrometer sample = 61.81

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 19.3          | 80.7             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 15.2          | 84.8             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 12.5          | 87.5             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 12.5          | 87.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0067         | 9.8           | 90.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 9.8           | 90.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 9.8           | 90.2             |

## Fractional Components

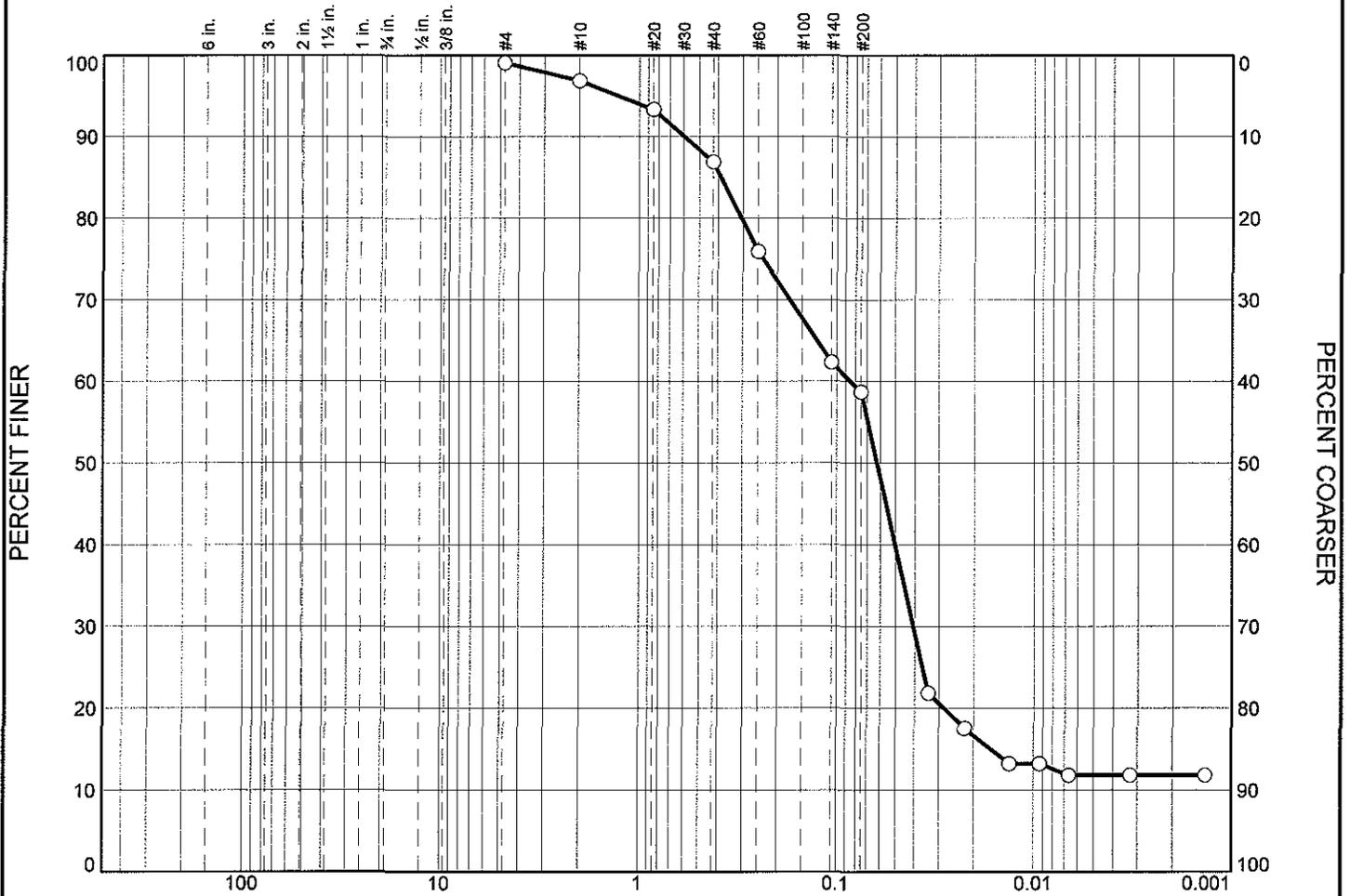
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.0      | 4.0     | 7.4  | 14.1 | 11.8 | 15.3    | 52.6  | 26.2 | 4.9  | 2.4  | 1.2     | 34.7  | 9.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0069          | 0.0215          | 0.0350          | 0.0444          | 0.0712          | 0.1265          | 0.3612          | 0.4731          | 0.7125          | 1.3880          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.82             | 18.37          | 2.26           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders                          | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|-------------------------------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|                                     |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| 0                                   |           |           | 1.7        | 2.9     | 5.6    | 12.5   | 11.0   | 14.7    | 29.3   | 6.3  | 2.1  | 0.7     | 11.8   |
| <input checked="" type="checkbox"/> | LL        | PL        | D85        | D60     | D50    | D30    | D15    | D10     | Cc     | Cu   |      |         |        |
| 0                                   |           |           | 0.3880     | 0.0849  | 0.0623 | 0.0406 | 0.0163 |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

|   |  |
|---|--|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="checkbox"/> <b>Source of Sample:</b> 502512 <b>Sample Number:</b> L0912911-02 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502512

Sample Number: L0912911-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.66                       | 0.00         | #4                 | 522.35                  | 521.74               | 99.1          | 0.9              |
|                             |              | #10                | 486.21                  | 484.76               | 96.9          | 3.1              |
|                             |              | #20                | 407.70                  | 405.38               | 93.3          | 6.7              |
|                             |              | #40                | 366.32                  | 362.09               | 86.9          | 13.1             |
|                             |              | #60                | 373.37                  | 366.15               | 75.9          | 24.1             |
|                             |              | #140               | 351.79                  | 342.88               | 62.3          | 37.7             |
|                             |              | #200               | 347.62                  | 345.24               | 58.7          | 41.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 58.7

Weight of hydrometer sample = 65.66

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 21.8          | 78.2             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 17.5          | 82.5             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 13.2          | 86.8             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 13.2          | 86.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 11.8          | 88.2             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 11.8          | 88.2             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 11.8          | 88.2             |

## Fractional Components

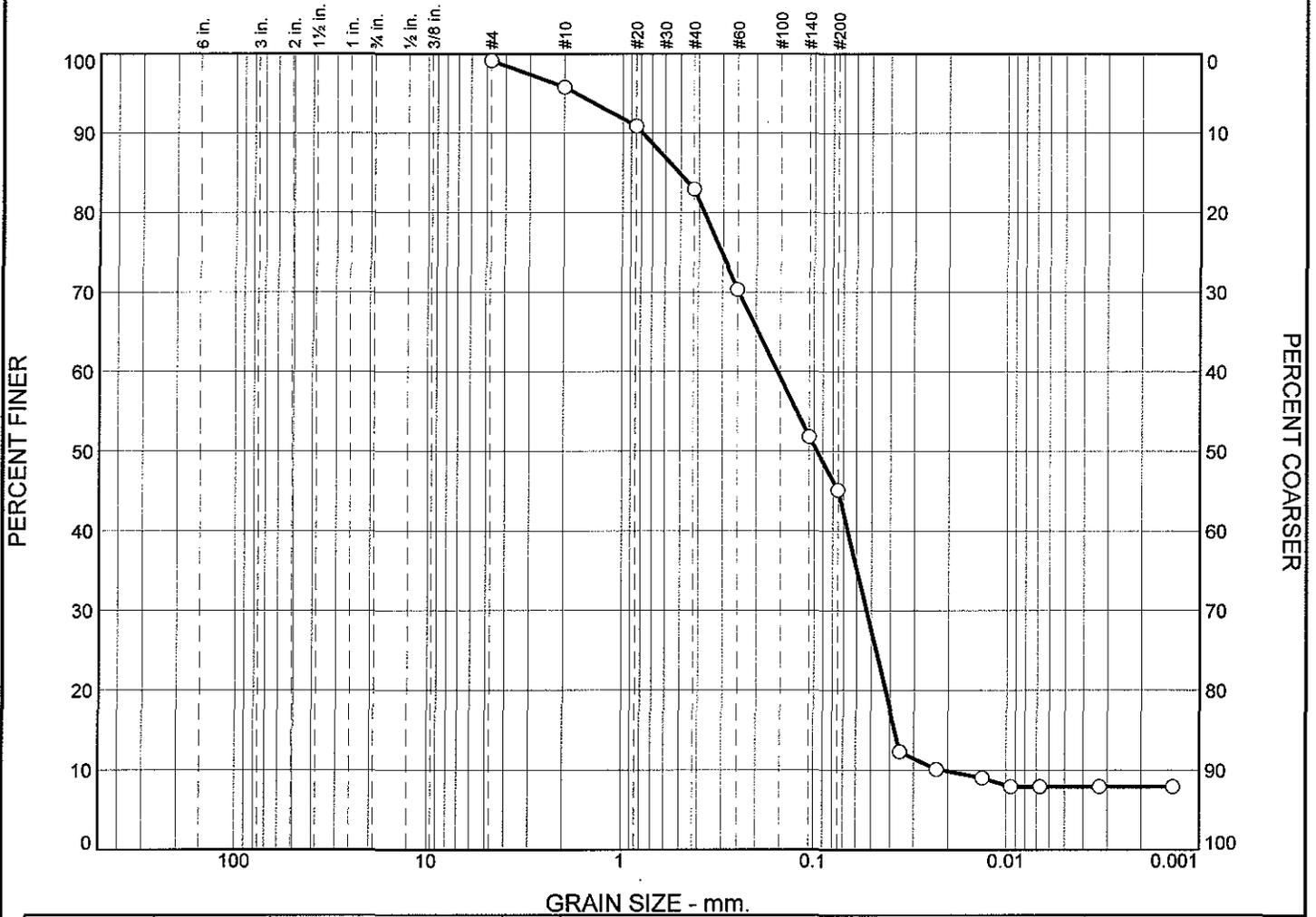
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 2.9     | 5.6  | 12.5 | 11.0 | 14.7    | 46.7  | 29.3 | 6.3  | 2.1  | 0.7     | 38.4  | 11.8 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0163 | 0.0284 | 0.0406 | 0.0623 | 0.0849 | 0.3048 | 0.3880 | 0.5941 | 1.2739 |

| Fineness Modulus |
|------------------|
| 0.71             |

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# Particle Size Distribution Report



GRAIN SIZE - mm.

| %                                   | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |        |      |        |         | % Silt |      |        |         | % Clay |  |      |
|-------------------------------------|----------|---|---------|---|---------|---|----------|---------|--------|------|--------|---------|--------|------|--------|---------|--------|--|------|
|                                     |          |   |         |   |         |   |          | V. Crs. | Crs.   | Med. | Fine   | V. Fine | Crs.   | Med. | Fine   | V. Fine |        |  |      |
| <input type="radio"/>               |          |   |         |   |         |   | 2.7      | 4.0     | 7.0    | 14.5 | 14.9   | 18.2    | 25.6   | 2.3  | 1.4    | 0.0     | 7.9    |  |      |
| <input checked="" type="checkbox"/> | LL       |   | PL      |   | D85     |   | D60      |         | D50    |      | D30    |         | D15    |      | D10    |         | Cc     |  | Cu   |
| <input type="radio"/>               |          |   |         |   | 0.5083  |   | 0.1549   |         | 0.0965 |      | 0.0531 |         | 0.0377 |      | 0.0217 |         | 0.84   |  | 7.15 |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 502513    <b>Sample Number:</b> L0912911-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502513

Sample Number: L0912911-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 66.11                       | 0.00         | #4                 | 521.44                  | 520.87               | 99.1          | 0.9              |
|                             |              | #10                | 484.29                  | 482.08               | 95.8          | 4.2              |
|                             |              | #20                | 414.32                  | 411.07               | 90.9          | 9.1              |
|                             |              | #40                | 383.07                  | 377.83               | 83.0          | 17.0             |
|                             |              | #60                | 378.21                  | 369.86               | 70.3          | 29.7             |
|                             |              | #140               | 359.44                  | 347.20               | 51.8          | 48.2             |
|                             |              | #200               | 350.91                  | 346.51               | 45.2          | 54.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 45.2

Weight of hydrometer sample = 66.11

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 12.3          | 87.7             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 10.1          | 89.9             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 9.0           | 91.0             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 7.9           | 92.1             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 7.9           | 92.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 7.9           | 92.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 7.9           | 92.1             |

## Fractional Components

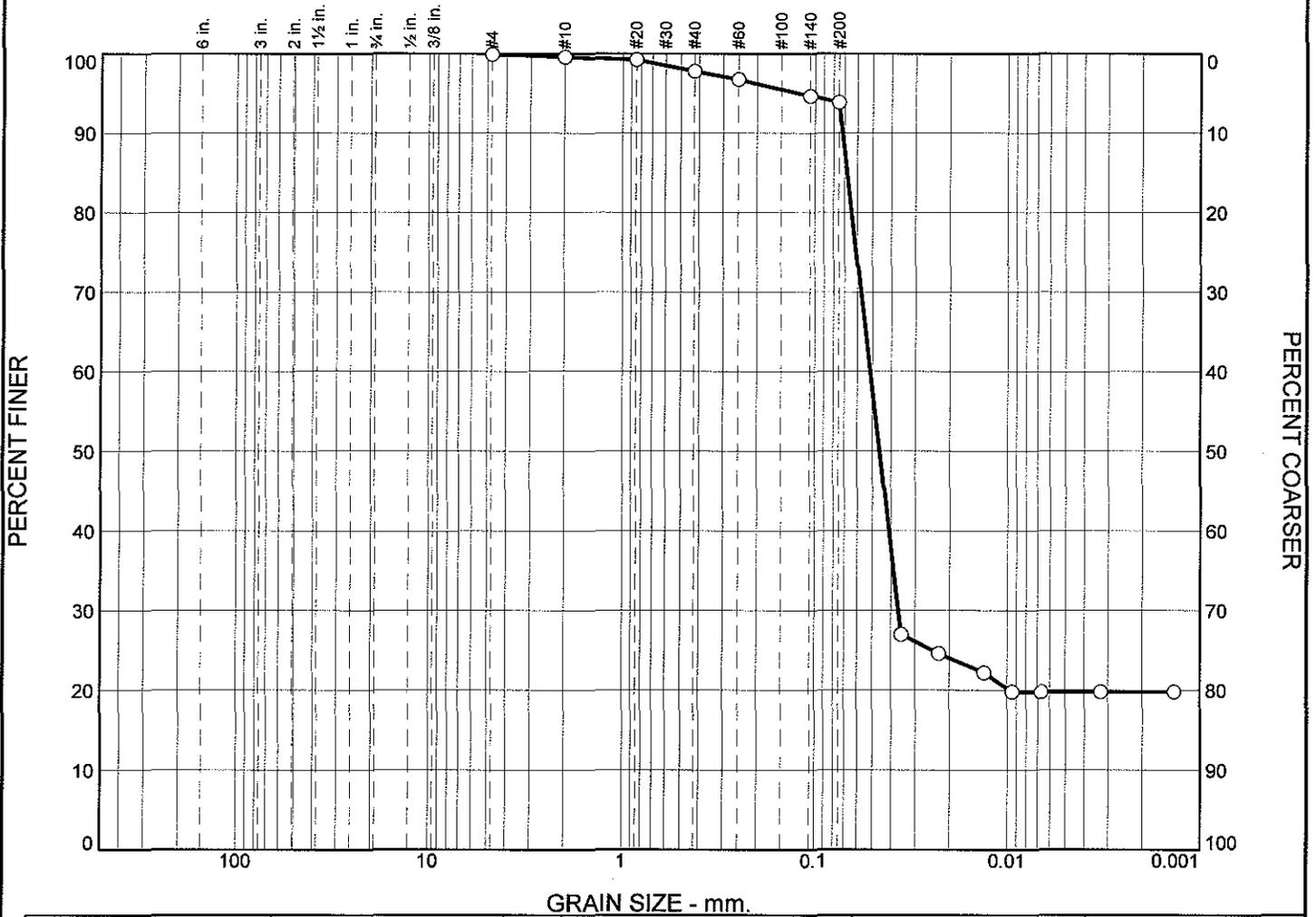
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.7      | 4.0     | 7.0  | 14.5 | 14.9 | 18.2    | 58.6  | 25.6 | 2.3  | 1.4  | 0.0     | 29.3  | 7.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0217          | 0.0377          | 0.0423          | 0.0531          | 0.0965          | 0.1549          | 0.3754          | 0.5083          | 0.7871          | 1.7416          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.91             | 7.15           | 0.84           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | Granules        | Sand            |                 |                 |                 |                | Silt           |      |      |         | Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |      |
| ○ |          |         |                 | 0.3             | 0.3             | 1.2             | 1.4             | 1.6             | 17.5           | 51.3           | 3.4  | 3.1  | 19.8    |      |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |      |
| ○ |          |         | 0.0679          | 0.0513          | 0.0459          | 0.0367          |                 |                 |                |                |      |      |         |      |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 502526 <b>Sample Number:</b> L0912911-04 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <p style="text-align: center;"><b>Alpha Analytical</b><br/>Mansfield, MA</p>   |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502526

Sample Number: L0912911-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.58                       | 0.00         | #4                 | 521.79                  | 521.74               | 99.9          | 0.1              |
|                             |              | #10                | 484.97                  | 484.76               | 99.6          | 0.4              |
|                             |              | #20                | 405.61                  | 405.38               | 99.2          | 0.8              |
|                             |              | #40                | 362.99                  | 362.09               | 97.8          | 2.2              |
|                             |              | #60                | 366.80                  | 366.15               | 96.7          | 3.3              |
|                             |              | #140               | 344.18                  | 342.88               | 94.7          | 5.3              |
|                             |              | #200               | 345.75                  | 345.24               | 93.8          | 6.2              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 93.8

Weight of hydrometer sample = 62.58

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 27.0          | 73.0             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 24.6          | 75.4             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 22.2          | 77.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 19.8          | 80.2             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 19.8          | 80.2             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 19.8          | 80.2             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 19.8          | 80.2             |

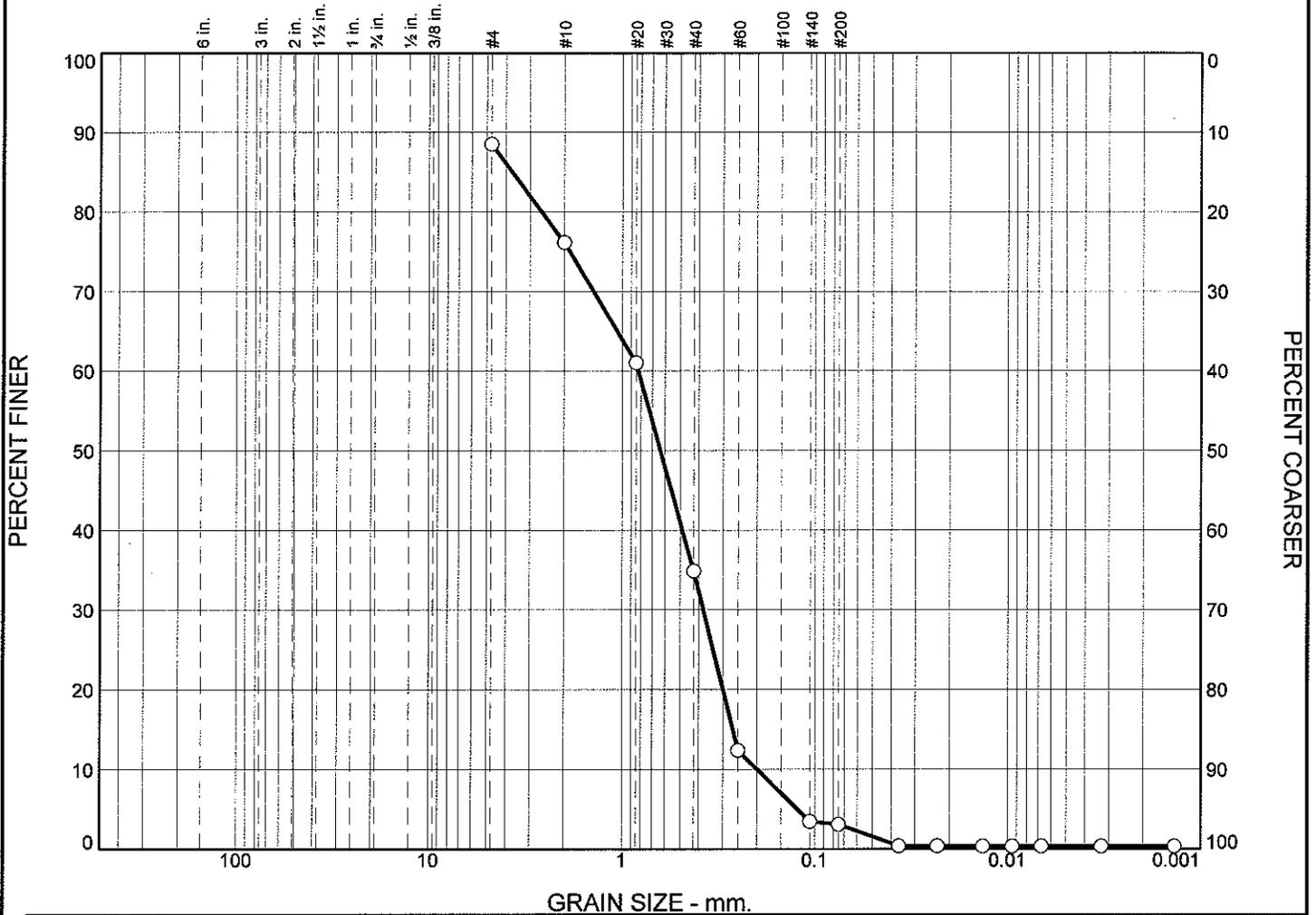
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.3     | 1.2  | 1.4  | 1.6  | 17.5    | 22.0  | 51.3 | 3.4  | 3.1  |         | 57.8  | 19.8 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0097 | 0.0367 | 0.0459 | 0.0513 | 0.0642 | 0.0679 | 0.0718 | 0.1218 |

| Fineness Modulus |
|------------------|
| 0.10             |

# Particle Size Distribution Report



| % | Boulders | Cobbles | Pebbles         | Granules        | Sand            |                 |                 |                 |                | Silt           |      |      |         | Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |      |
| ○ |          |         |                 | 10.0            | 12.2            | 22.9            | 28.6            | 7.2             | 2.8            | 2.0            | 0.0  | 0.0  | 0.0     | 0.4  |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |      |
| ○ |          |         | 3.7146          | 0.8272          | 0.6345          | 0.3788          | 0.2660          | 0.1990          | 0.87           | 4.16           |      |      |         |      |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502611    <b>Sample Number:</b> L0912911-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912911  
**Location:** 502611  
**Sample Number:** L0912911-05  
**USCS Classification:** SP  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 98.50                       | 0.00         | #4                 | 532.18                  | 520.87               | 88.5          | 11.5             |
|                             |              | #10                | 494.27                  | 482.08               | 76.1          | 23.9             |
|                             |              | #20                | 425.96                  | 411.07               | 61.0          | 39.0             |
|                             |              | #40                | 403.58                  | 377.83               | 34.9          | 65.1             |
|                             |              | #60                | 392.04                  | 369.86               | 12.4          | 87.6             |
|                             |              | #140               | 355.97                  | 347.20               | 3.5           | 96.5             |
|                             |              | #200               | 346.87                  | 346.51               | 3.1           | 96.9             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 3.1  
 Weight of hydrometer sample =98.50  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.4           | 99.6             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 0.4           | 99.6             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.4           | 99.6             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.4           | 99.6             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.4           | 99.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.4           | 99.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.4           | 99.6             |

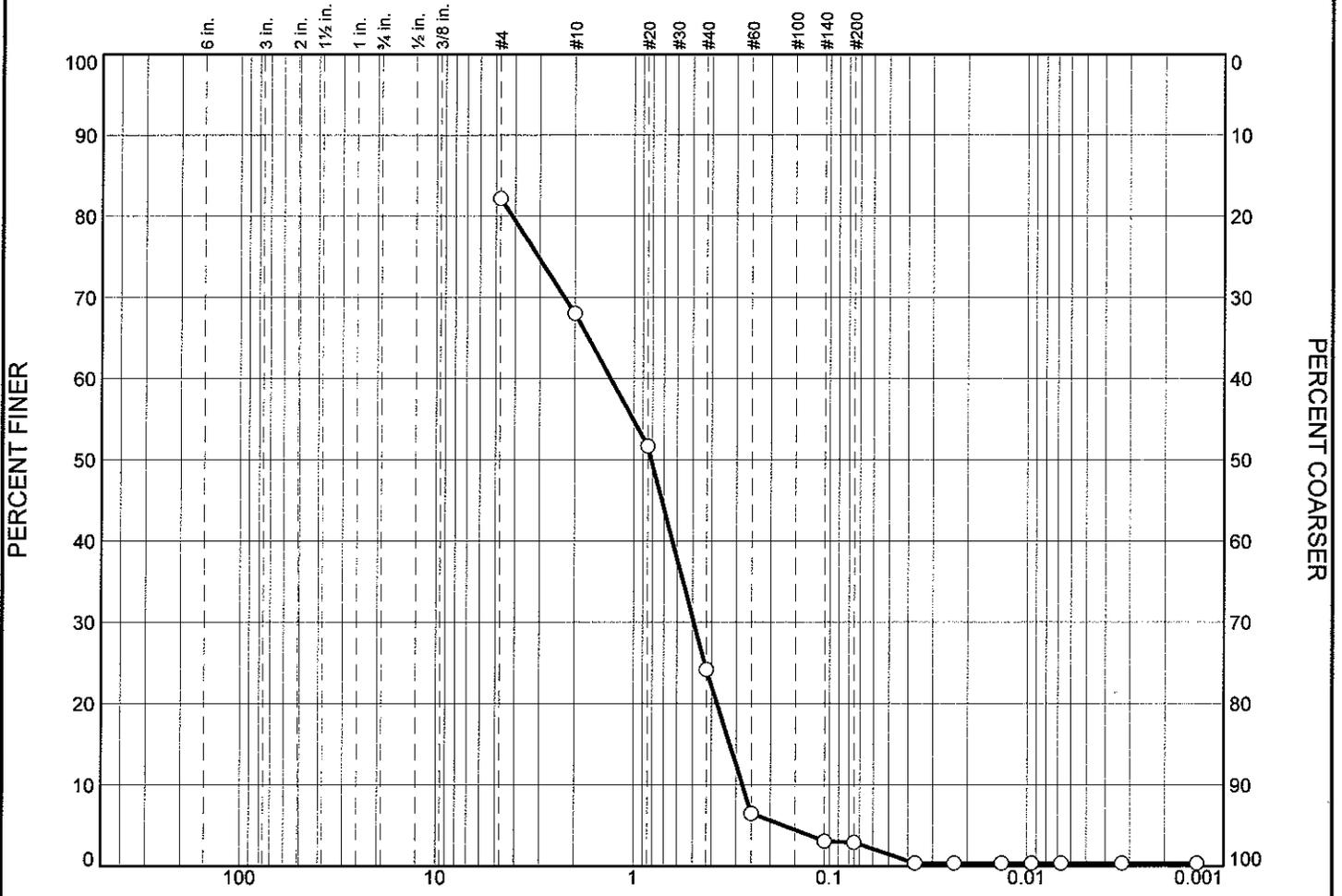
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 10.0     | 12.2    | 22.9 | 28.6 | 7.2  | 2.8     | 73.7  | 2.0  | 0.0  | 0.0  | 0.0     | 2.0   | 0.4  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90 | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|-----|-----|
| 0.1990 | 0.2660 | 0.2993 | 0.3788 | 0.6345 | 0.8272 | 2.6190 | 3.7146 |     |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.91             | 4.16           | 0.87           |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 11.4       | 13.2    | 24.2   | 24.1   | 2.8  | 1.4     | 1.9    | 0.0  | 0.0  | 0.0     | 0.4    |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 1.3148    | 0.8153     | 0.4925  | 0.3229 | 0.2778 | 0.66 | 4.73    |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502612    <b>Sample Number:</b> L0912911-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502612

Sample Number: L0912911-06

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 95.02                       | 0.00         | #4                 | 538.63                  | 521.74               | 82.2          | 17.8             |
|                             |              | #10                | 498.25                  | 484.76               | 68.0          | 32.0             |
|                             |              | #20                | 420.94                  | 405.38               | 51.7          | 48.3             |
|                             |              | #40                | 388.22                  | 362.09               | 24.2          | 75.8             |
|                             |              | #60                | 382.94                  | 366.15               | 6.5           | 93.5             |
|                             |              | #140               | 346.12                  | 342.88               | 3.1           | 96.9             |
|                             |              | #200               | 345.39                  | 345.24               | 2.9           | 97.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 2.9

Weight of hydrometer sample = 95.02

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 0.4           | 99.6             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.4           | 99.6             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.4           | 99.6             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.4           | 99.6             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.4           | 99.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.4           | 99.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.4           | 99.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 11.4     | 13.2    | 24.2 | 24.1 | 2.8  | 1.4     | 65.7  | 1.9  | 0.0  | 0.0  | 0.0     | 1.9   | 0.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.2778          | 0.3229          | 0.3752          | 0.4925          | 0.8153          | 1.3148          | 4.1479          |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.34             | 4.73           | 0.66           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502613

Sample Number: L0912911-07

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 76.18                       | 0.00         | #4                 | 526.04                  | 520.87               | 93.2          | 6.8              |
|                             |              | #10                | 490.19                  | 482.08               | 82.6          | 17.4             |
|                             |              | #20                | 422.12                  | 411.07               | 68.1          | 31.9             |
|                             |              | #40                | 399.32                  | 377.83               | 39.9          | 60.1             |
|                             |              | #60                | 391.13                  | 369.86               | 11.9          | 88.1             |
|                             |              | #140               | 353.61                  | 347.20               | 3.5           | 96.5             |
|                             |              | #200               | 346.79                  | 346.51               | 3.2           | 96.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 3.2

Weight of hydrometer sample = 76.18

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 0.5           | 99.5             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.5           | 99.5             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.5           | 99.5             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.5           | 99.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.5           | 99.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.5           | 99.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.5           | 99.5             |

## Fractional Components

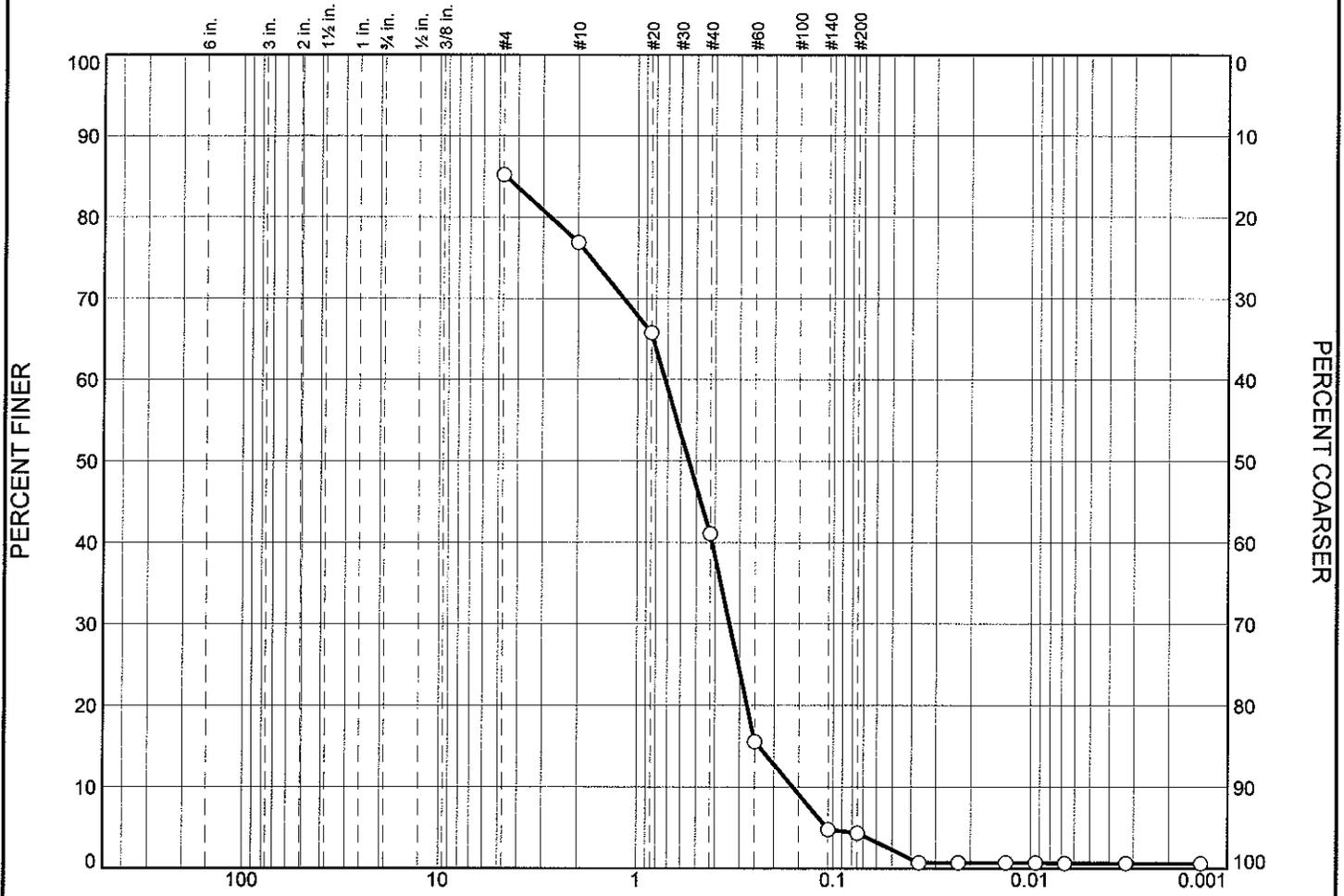
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 8.5      | 11.8    | 24.3 | 34.6 | 6.8  | 2.6     | 80.1  | 2.0  | 0.0  | 0.0  | 0.0     | 2.0   | 0.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.2053          | 0.2650          | 0.2914          | 0.3524          | 0.5453          | 0.6972          | 1.7189          | 2.4370          | 3.6585          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.66             | 3.40           | 0.87           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        | % Silt  |      |      |      | % Clay |         |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|------|------|------|--------|---------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○ |            |           |           | 6.7        | 9.0     | 21.0   | 31.4   | 8.7    | 3.4     | 2.7  | 0.0  | 0.0  | 0.1    | 0.6     |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu   |      |      |        |         |
| ○ |            |           | 4.6383    | 0.7228     | 0.5458  | 0.3376 | 0.2395 | 0.1608 | 0.98    | 4.50 |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502626    <b>Sample Number:</b> L0912911-08</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502626

Sample Number: L0912911-08

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 81.04                       | 0.00         | #4                 | 533.71                  | 521.74               | 85.2          | 14.8             |
|                             |              | #10                | 491.52                  | 484.76               | 76.9          | 23.1             |
|                             |              | #20                | 414.39                  | 405.38               | 65.8          | 34.2             |
|                             |              | #40                | 382.09                  | 362.09               | 41.1          | 58.9             |
|                             |              | #60                | 386.86                  | 366.15               | 15.5          | 84.5             |
|                             |              | #140               | 351.60                  | 342.88               | 4.8           | 95.2             |
|                             |              | #200               | 345.60                  | 345.24               | 4.3           | 95.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 4.3

Weight of hydrometer sample = 81.04

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.7           | 99.3             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 0.7           | 99.3             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 0.7           | 99.3             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 0.7           | 99.3             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.6           | 99.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.6           | 99.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.6           | 99.4             |

## Fractional Components

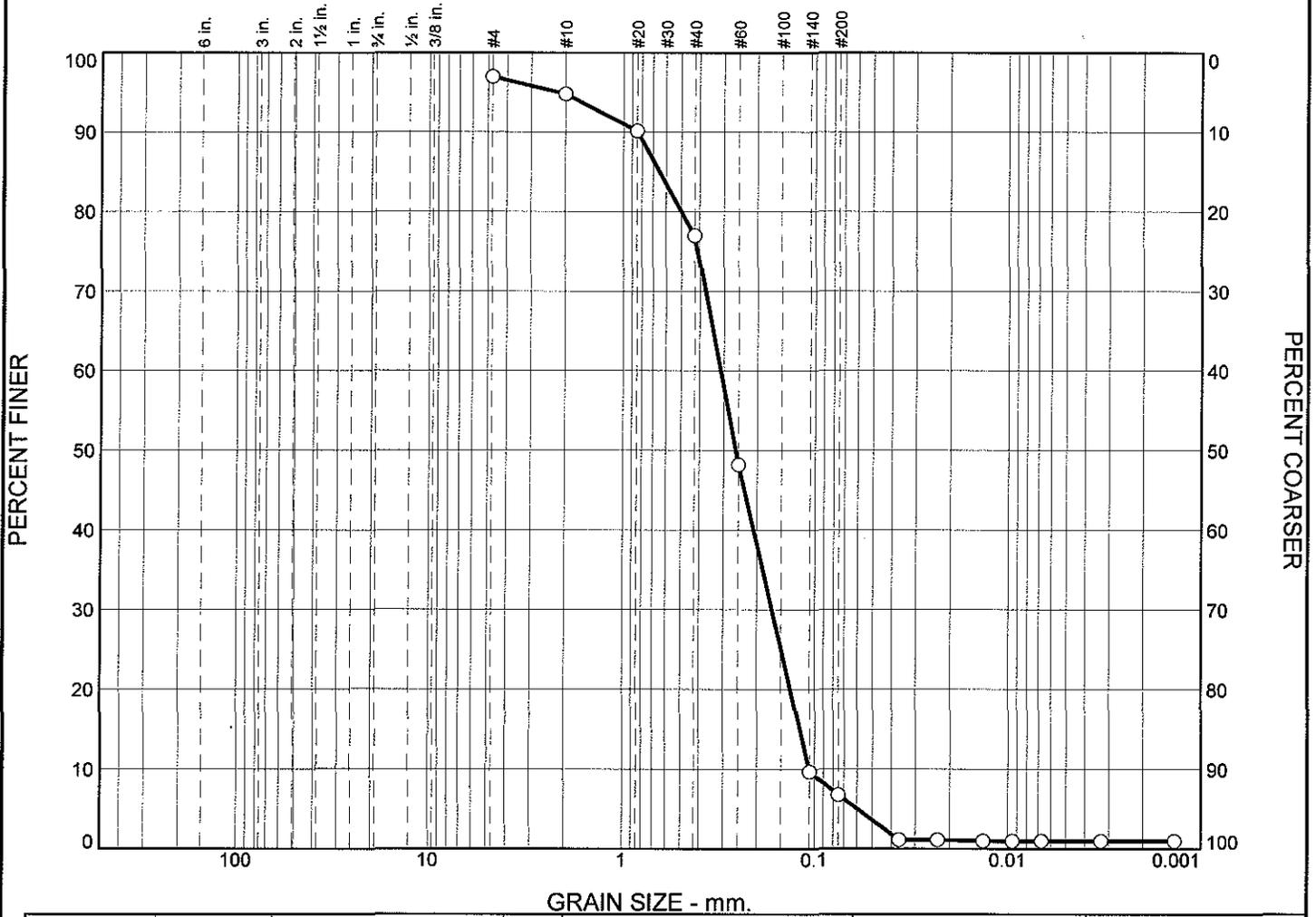
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.7      | 9.0     | 21.0 | 31.4 | 8.7  | 3.4     | 73.5  | 2.7  | 0.0  | 0.0  | 0.1     | 2.8   | 0.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1608          | 0.2395          | 0.2743          | 0.3376          | 0.5458          | 0.7228          | 2.7617          | 4.6383          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.79             | 4.50           | 0.98           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 1.7             | 3.8             | 10.9            | 31.9            | 31.2            | 11.7           | 4.2            | 0.1  | 0.0  | 0.0     | 1.0    |  |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.6481          | 0.3109          | 0.2586          | 0.1668          | 0.1194          | 0.1068          | 0.84           | 2.91           |      |      |         |        |  |

|   | USCS | AASHTO |
|---|------|--------|
| ○ |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502711    <b>Sample Number:</b> L0912911-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502711

Sample Number: L0912911-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 78.25                       | 0.00         | #4                 | 524.11                  | 521.74               | 97.0          | 3.0              |
|                             |              | #10                | 486.47                  | 484.76               | 94.8          | 5.2              |
|                             |              | #20                | 409.00                  | 405.38               | 90.2          | 9.8              |
|                             |              | #40                | 372.41                  | 362.09               | 77.0          | 23.0             |
|                             |              | #60                | 388.69                  | 366.15               | 48.2          | 51.8             |
|                             |              | #140               | 373.02                  | 342.88               | 9.6           | 90.4             |
|                             |              | #200               | 347.51                  | 345.24               | 6.7           | 93.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 6.7

Weight of hydrometer sample = 78.25

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 1.1           | 98.9             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.1           | 98.9             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 1.0           | 99.0             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 1.0           | 99.0             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.0           | 99.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.0           | 99.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.0           | 99.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 3.8     | 10.9 | 31.9 | 31.2 | 11.7    | 89.5  | 4.2  | 0.1  | 0.0  | 0.0     | 4.3   | 1.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1068          | 0.1194          | 0.1335          | 0.1668          | 0.2586          | 0.3109          | 0.4983          | 0.6481          | 0.8429          | 2.1768          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.49             | 2.91           | 0.84           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |        |        |        |         | Silt |      |      | Clay |
|---|----------|---------|---------|----------|---------|--------|--------|--------|---------|------|------|------|------|
|   |          |         |         |          | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs. | Med. | Fine |      |
| ○ |          |         |         | 1.2      | 3.1     | 7.8    | 27.8   | 34.4   | 13.4    | 4.3  | 0.0  | 0.2  | 1.2  |
| × | LL       | PL      | D85     | D60      | D50     | D30    | D15    | D10    | Cc      | Cu   |      |      |      |
| ○ |          |         | 0.6602  | 0.2863   | 0.2331  | 0.1557 | 0.1150 | 0.0971 | 0.87    | 2.95 |      |      |      |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502712    <b>Sample Number:</b> L0912911-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502712

Sample Number: L0912911-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.25                       | 0.00         | #4                 | 525.25                  | 520.87               | 93.7          | 6.3              |
|                             |              | #10                | 483.07                  | 482.08               | 92.2          | 7.8              |
|                             |              | #20                | 413.74                  | 411.07               | 88.4          | 11.6             |
|                             |              | #40                | 384.27                  | 377.83               | 79.1          | 20.9             |
|                             |              | #60                | 387.61                  | 369.86               | 53.5          | 46.5             |
|                             |              | #140               | 376.63                  | 347.20               | 11.0          | 89.0             |
|                             |              | #200               | 349.14                  | 346.51               | 7.2           | 92.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 7.2

Weight of hydrometer sample = 69.25

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 1.4           | 98.6             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.4           | 98.6             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.4           | 98.6             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 1.2           | 98.8             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.2           | 98.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.2           | 98.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.2           | 98.8             |

## Fractional Components

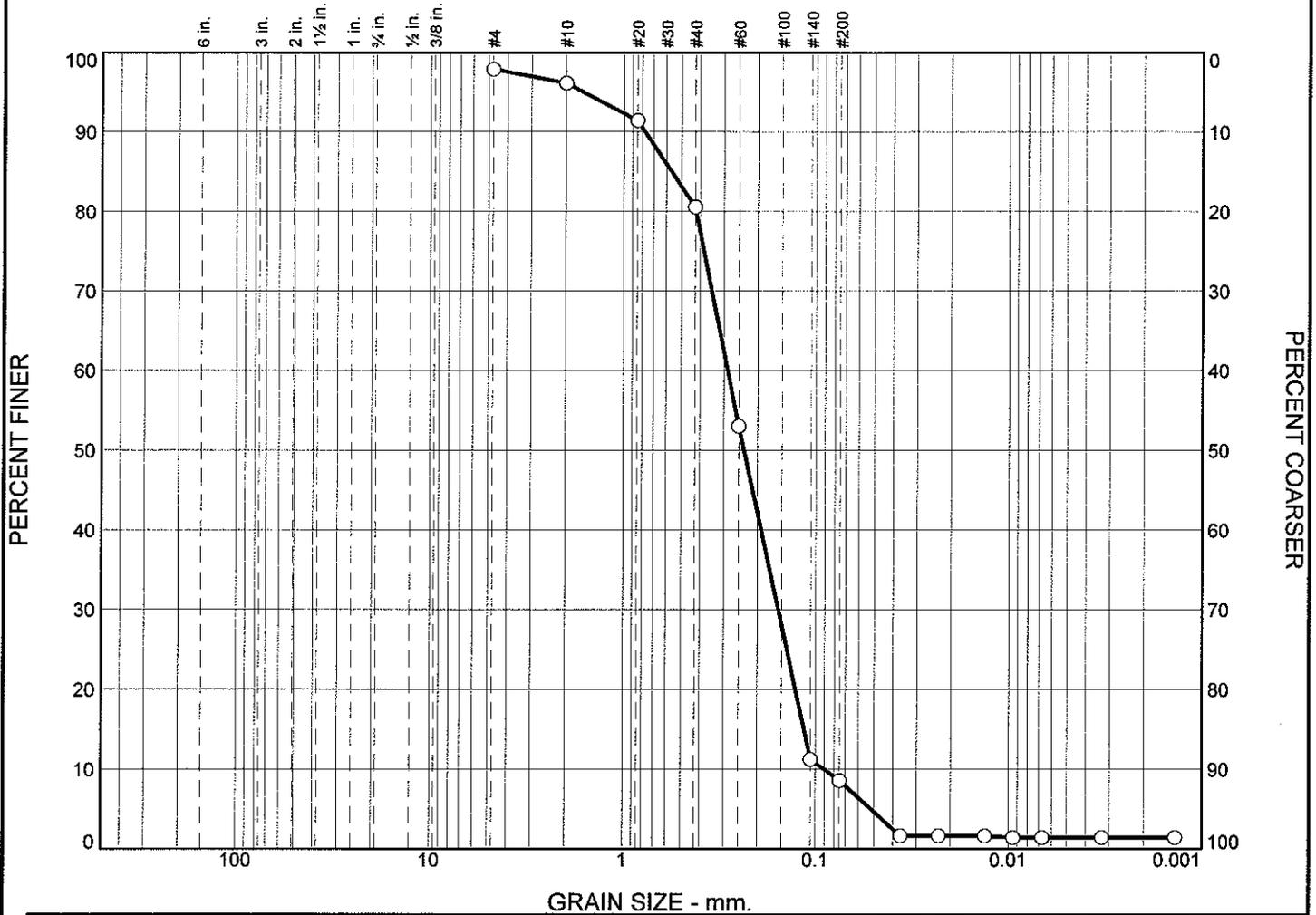
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 1.2      | 3.1     | 7.8  | 27.8 | 34.4 | 13.4    | 86.5  | 4.3  | 0.0  | 0.2  |         | 4.5  | 1.2   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0971          | 0.1150          | 0.1272          | 0.1557          | 0.2331          | 0.2863          | 0.4548          | 0.6602          | 1.2151          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.50             | 2.95           | 0.87           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders                          | % Cobbles | % Pebbles | % Granules      | % Sand          |                 |                 |                 | % Silt          |                |                |      | % Clay |         |
|-------------------------------------|-----------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|--------|---------|
|                                     |           |           |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine         | Crs.           | Med.           | Fine |        | V. Fine |
| 0                                   |           |           | 1.4             | 3.8             | 9.2             | 30.1            | 33.7            | 12.5            | 5.2            | 0.0            | 0.2  | 0.0    | 1.4     |
| <input checked="" type="checkbox"/> | LL        | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |        |         |
| 0                                   |           |           | 0.5644          | 0.2861          | 0.2351          | 0.1559          | 0.1145          | 0.0903          | 0.94           | 3.17           |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

|   |                             |
|---|-----------------------------|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="checkbox"/> <b>Source of Sample:</b> 502713 <b>Sample Number:</b> L0912911-11 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502713

Sample Number: L0912911-11

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.47                       | 0.00         | #4                 | 523.20                  | 521.74               | 97.9          | 2.1              |
|                             |              | #10                | 485.98                  | 484.76               | 96.1          | 3.9              |
|                             |              | #20                | 408.66                  | 405.38               | 91.4          | 8.6              |
|                             |              | #40                | 369.64                  | 362.09               | 80.6          | 19.4             |
|                             |              | #60                | 385.29                  | 366.15               | 53.0          | 47.0             |
|                             |              | #140               | 371.90                  | 342.88               | 11.2          | 88.8             |
|                             |              | #200               | 347.08                  | 345.24               | 8.6           | 91.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 8.6

Weight of hydrometer sample = 69.47

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 1.6           | 98.4             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.6           | 98.4             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.6           | 98.4             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 1.4           | 98.6             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.4           | 98.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.4           | 98.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.4           | 98.6             |

## Fractional Components

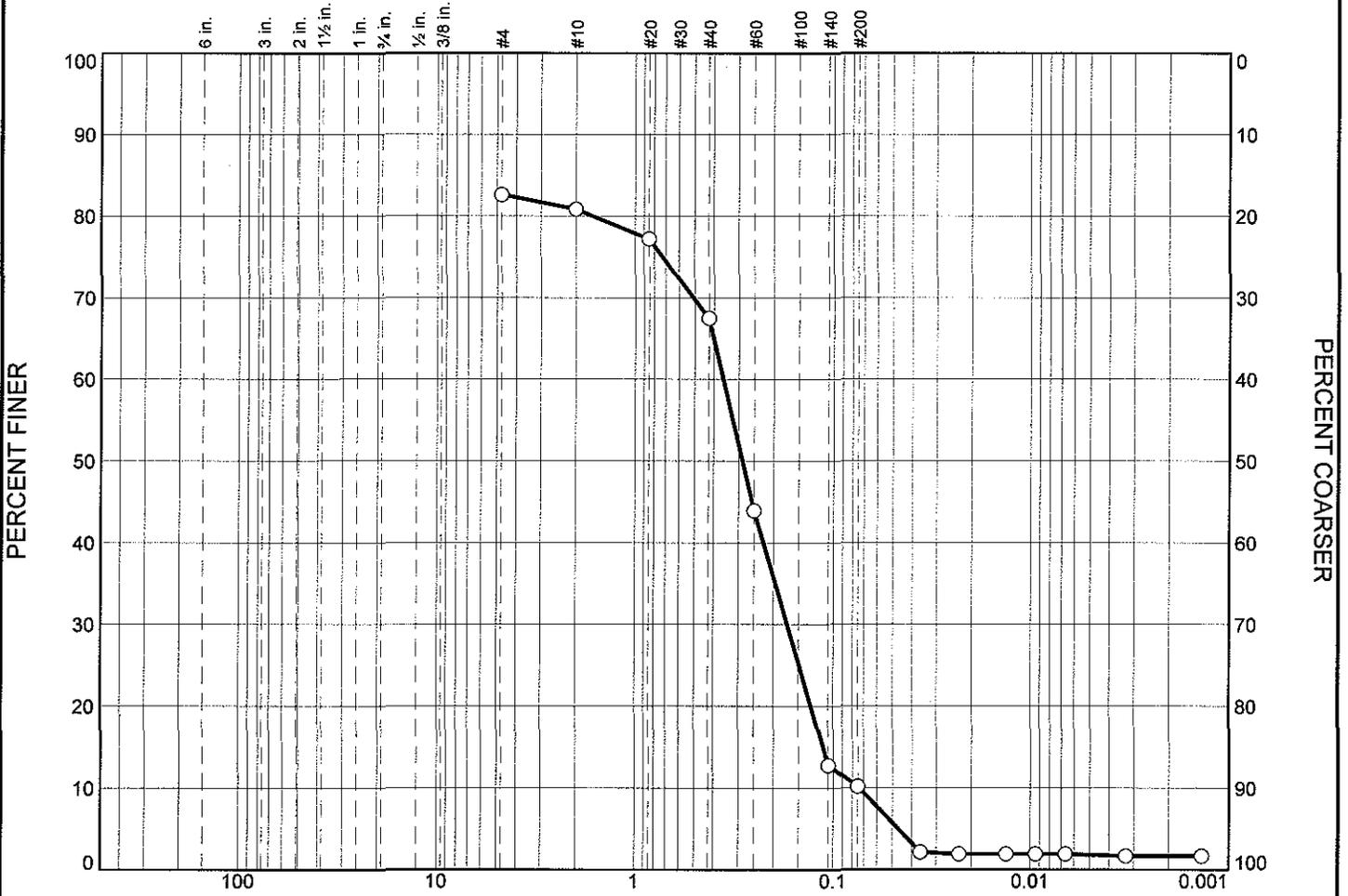
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.4      | 3.8     | 9.2  | 30.1 | 33.7 | 12.5    | 89.3  | 5.2  | 0.0  | 0.2  | 0.0     | 5.4   | 1.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0903          | 0.1145          | 0.1269          | 0.1559          | 0.2351          | 0.2861          | 0.4205          | 0.5644          | 0.7764          | 1.6260          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.36             | 3.17           | 0.94           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      | % Silt  |      |      |      | % Clay |         |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|------|---------|------|------|------|--------|---------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| <input type="radio"/>               |            |           |           | 1.5        | 2.9     | 8.2    | 25.8   | 25.2 | 10.5    | 6.1  | 0.2  | 0.0  | 0.2    | 1.7     |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  | Cc      | Cu   |      |      |        |         |
| <input type="radio"/>               |            |           | 0.3593    | 0.2869     | 0.1705  | 0.1128 | 0.0738 | 1.10 | 4.87    |      |      |      |        |         |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 502726 <b>Sample Number:</b> L0912911-12 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912911  
 Location: 502726  
 Sample Number: L0912911-12  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.68                       | 0.00         | #4                 | 532.99                  | 520.87               | 82.6          | 17.4             |
|                             |              | #10                | 483.32                  | 482.08               | 80.8          | 19.2             |
|                             |              | #20                | 413.60                  | 411.07               | 77.2          | 22.8             |
|                             |              | #40                | 384.61                  | 377.83               | 67.5          | 32.5             |
|                             |              | #60                | 386.29                  | 369.86               | 43.9          | 56.1             |
|                             |              | #140               | 368.89                  | 347.20               | 12.8          | 87.2             |
|                             |              | #200               | 348.31                  | 346.51               | 10.2          | 89.8             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 10.2  
 Weight of hydrometer sample = 69.68  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 2.2           | 97.8             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.9           | 98.1             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.9           | 98.1             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.9           | 98.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 1.9           | 98.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.7           | 98.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.7           | 98.3             |

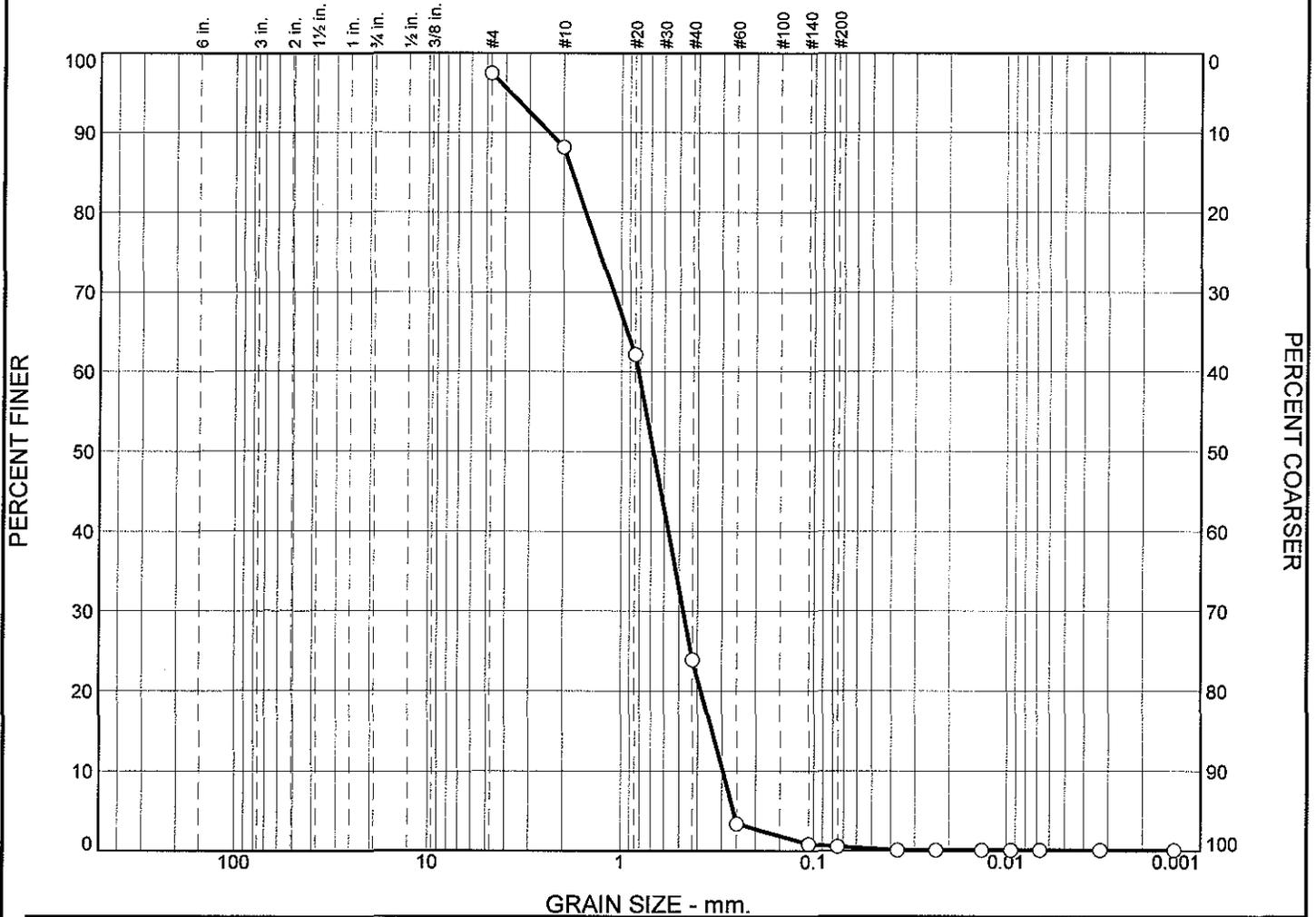
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.5      | 2.9     | 8.2  | 25.8 | 25.2 | 10.5    | 72.6  | 6.1  | 0.2  | 0.0  | 0.2     | 6.5   | 1.7  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0738          | 0.1128          | 0.1294          | 0.1705          | 0.2869          | 0.3593          | 1.6460          |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.08             | 4.87           | 1.10           |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| 0          |           |           | 7.4        | 21.1    | 34.2 | 29.5 | 2.1  | 0.9     | 0.3    | 0.0  | 0.0  | 0.0     | 0.1    |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|----|----|--------|--------|--------|--------|--------|--------|------|------|
| 0  |    | 1.8029 | 0.8176 | 0.6821 | 0.4747 | 0.3376 | 0.2966 | 0.93 | 2.76 |

| Material Description |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|------|--------|
| 0                    |  |  |  |  |  |  | SP   |        |

|   |                             |
|---|-----------------------------|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 502826 <b>Sample Number:</b> WG382946-1 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502826

Sample Number: WG382946-1

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 78.25                       | 0.00         | #4                 | 522.84                  | 520.87               | 97.5          | 2.5              |
|                             |              | #10                | 489.38                  | 482.08               | 88.2          | 11.8             |
|                             |              | #20                | 431.42                  | 411.07               | 62.1          | 37.9             |
|                             |              | #40                | 407.76                  | 377.83               | 23.9          | 76.1             |
|                             |              | #60                | 385.90                  | 369.86               | 3.4           | 96.6             |
|                             |              | #140               | 349.19                  | 347.20               | 0.9           | 99.1             |
|                             |              | #200               | 346.75                  | 346.51               | 0.5           | 99.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 0.5

Weight of hydrometer sample = 78.25

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 0.1           | 99.9             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.1           | 99.9             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.1           | 99.9             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.1           | 99.9             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.1           | 99.9             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.1           | 99.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.1           | 99.9             |

## Fractional Components

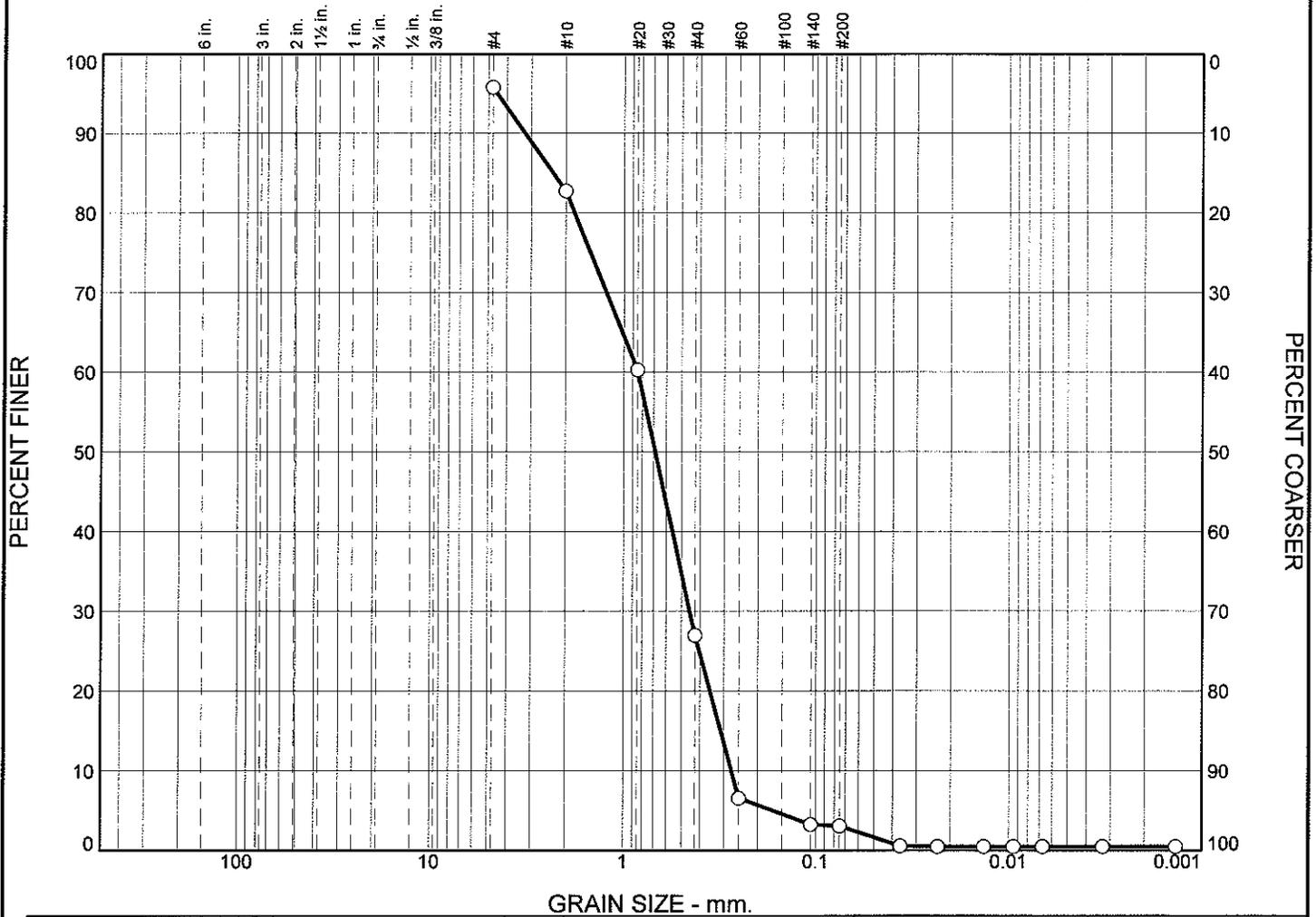
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.4      | 21.1    | 34.2 | 29.5 | 2.1  | 0.9     | 87.8  | 0.3  | 0.0  | 0.0  | 0.0     | 0.3   | 0.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.2966          | 0.3376          | 0.3842          | 0.4747          | 0.6821          | 0.8176          | 1.5294          | 1.8029          | 2.3735          | 3.7734          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.85             | 2.76           | 0.93           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |        |        |        |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|--------|--------|--------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 10.4     | 18.3    | 29.7   | 28.2   | 2.7    | 1.5     | 1.9  | 0.0  | 0.0  | 0.0     | 0.5  |
| ⊗ | LL       | PL      | D85     | D60      | D50     | D30    | D15    | D10    | Cc      | Cu   |      |      |         |      |
| ○ |          |         | 2.3207  | 0.8452   | 0.6864  | 0.4527 | 0.3114 | 0.2734 | 0.89    | 3.09 |      |      |         |      |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  | SP   |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 502811 <b>Sample Number:</b> L0912911-13 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502811

Sample Number: L0912911-13

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 72.79                       | 0.00         | #4                 | 524.80                  | 521.74               | 95.8          | 4.2              |
|                             |              | #10                | 494.25                  | 484.76               | 82.8          | 17.2             |
|                             |              | #20                | 421.75                  | 405.38               | 60.3          | 39.7             |
|                             |              | #40                | 386.33                  | 362.09               | 27.0          | 73.0             |
|                             |              | #60                | 381.01                  | 366.15               | 6.6           | 93.4             |
|                             |              | #140               | 345.29                  | 342.88               | 3.2           | 96.8             |
|                             |              | #200               | 345.37                  | 345.24               | 3.1           | 96.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 3.1

Weight of hydrometer sample = 72.79

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.6           | 99.4             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.5           | 99.5             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.5           | 99.5             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.5           | 99.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.5           | 99.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.5           | 99.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.5           | 99.5             |

## Fractional Components

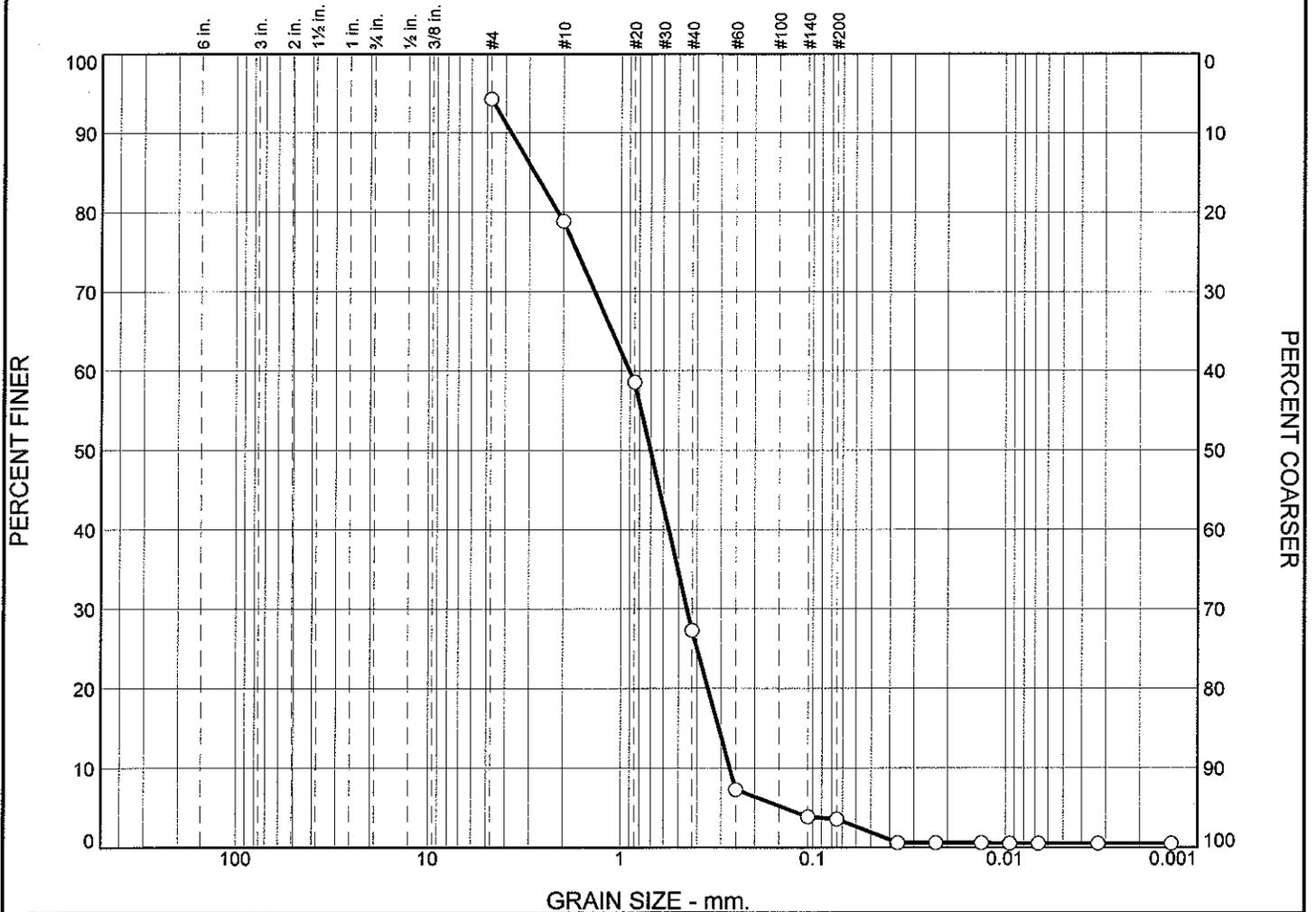
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 10.4     | 18.3    | 29.7 | 28.2 | 2.7  | 1.5     | 80.4  | 1.9  | 0.0  | 0.0  | 0.0     | 1.9   | 0.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.2734          | 0.3114          | 0.3546          | 0.4527          | 0.6864          | 0.8452          | 1.8007          | 2.3207          | 3.2336          | 4.5056          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.88             | 3.09           | 0.89           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders                          | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      | % Clay |
|-------------------------------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|--------|
|                                     |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine |        |
| <input type="checkbox"/>            |           |           | 12.3       | 16.5    | 27.8   | 27.3   | 2.8    | 1.7     | 2.2    | 0.0  | 0.1  | 0.5    |
| <input checked="" type="checkbox"/> | LL        | PL        | D85        | D60     | D50    | D30    | D15    | D10     | Cc     | Cu   |      |        |
| <input type="checkbox"/>            |           |           | 2.8211     | 0.9030  | 0.7030 | 0.4513 | 0.3068 | 0.2687  | 0.84   | 3.36 |      |        |

| Material Description     |  |  |  |  |  |  |  | USCS | AASHTO |
|--------------------------|--|--|--|--|--|--|--|------|--------|
| <input type="checkbox"/> |  |  |  |  |  |  |  | SP   |        |

|   |                             |
|---|-----------------------------|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="checkbox"/> <b>Source of Sample:</b> 502812 <b>Sample Number:</b> L0912911-14 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502812

Sample Number: L0912911-14

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 79.11                       | 0.00         | #4                 | 525.40                  | 520.87               | 94.3          | 5.7              |
|                             |              | #10                | 494.26                  | 482.08               | 78.9          | 21.1             |
|                             |              | #20                | 427.14                  | 411.07               | 58.6          | 41.4             |
|                             |              | #40                | 402.57                  | 377.83               | 27.3          | 72.7             |
|                             |              | #60                | 385.69                  | 369.86               | 7.3           | 92.7             |
|                             |              | #140               | 349.91                  | 347.20               | 3.9           | 96.1             |
|                             |              | #200               | 346.74                  | 346.51               | 3.6           | 96.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 3.6

Weight of hydrometer sample = 79.11

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.6           | 99.4             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 0.6           | 99.4             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 0.6           | 99.4             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.5           | 99.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.5           | 99.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.5           | 99.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.5           | 99.5             |

## Fractional Components

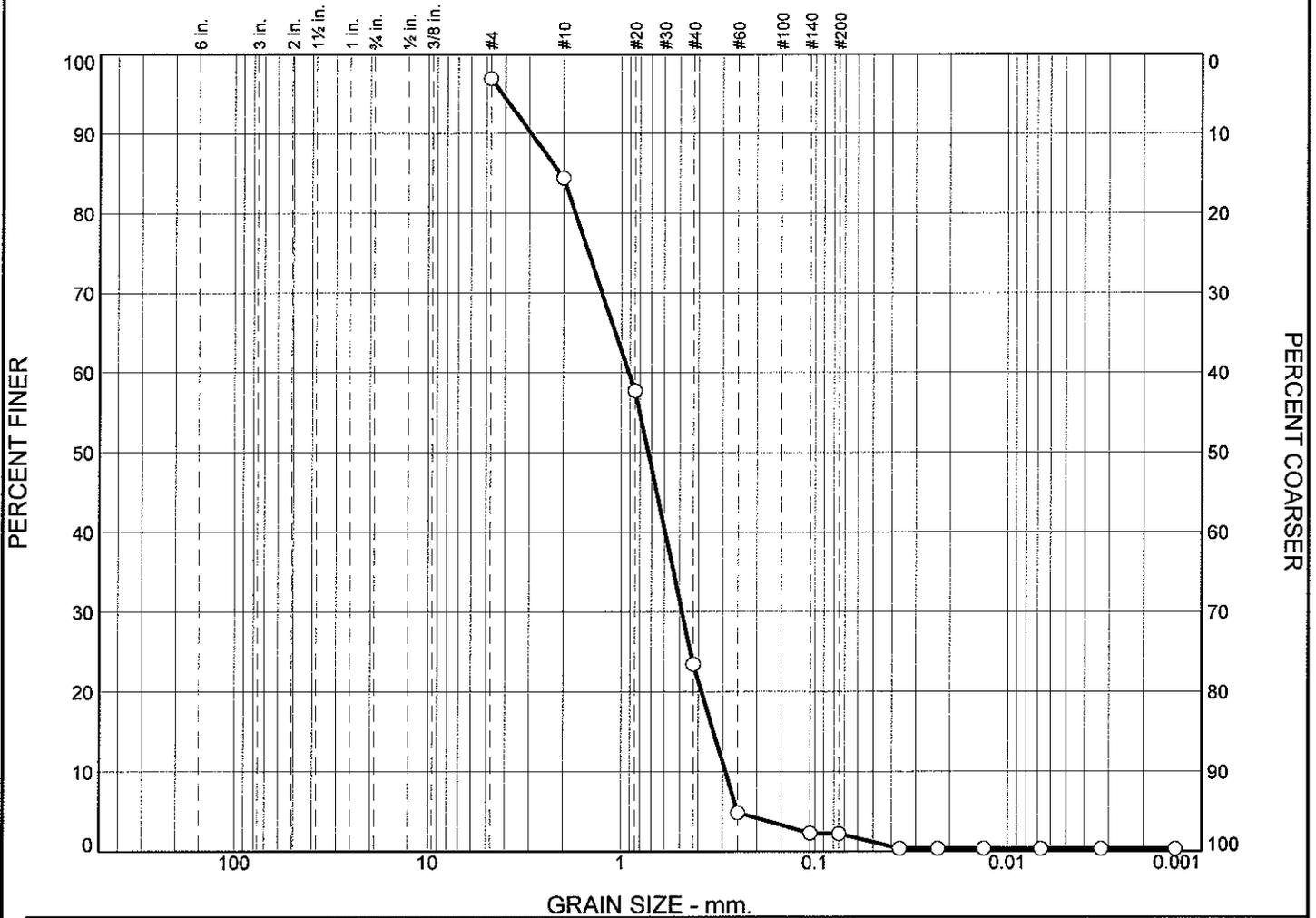
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 12.3     | 16.5    | 27.8 | 27.3 | 2.8  | 1.7     | 76.1  | 2.2  | 0.0  | 0.1  |         | 2.3   | 0.5  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 0.2687 | 0.3068 | 0.3503 | 0.4513 | 0.7030 | 0.9030 | 2.1302 | 2.8211 | 3.7361 |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.95             | 3.36           | 0.84           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| %                                   | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 | % Silt  |                 |      |                 | % Clay |                |  |                |
|-------------------------------------|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|--------|----------------|--|----------------|
|                                     |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |        | V. Fine        |  |                |
| <input type="checkbox"/>            |          |   |         |   |                 |   | 10.1            | 21.6    | 31.3            | 26.7 | 2.0             | 1.0     | 1.4             | 0.0  | 0.1             | 0.3    |                |  |                |
| <input checked="" type="checkbox"/> | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> |  | C <sub>u</sub> |
| <input type="checkbox"/>            |          |   |         |   | 2.0820          |   | 0.9139          |         | 0.7269          |      | 0.4852          |         | 0.3340          |      | 0.2896          |        | 0.89           |  | 3.16           |

| Material Description     | USCS | AASHTO |
|--------------------------|------|--------|
| <input type="checkbox"/> | SP   |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="checkbox"/> <b>Source of Sample:</b> 502813    <b>Sample Number:</b> L0912911-15</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502813

Sample Number: L0912911-15

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 80.22                       | 0.00         | #4                 | 524.19                  | 521.74               | 96.9          | 3.1              |
|                             |              | #10                | 494.81                  | 484.76               | 84.4          | 15.6             |
|                             |              | #20                | 426.78                  | 405.38               | 57.7          | 42.3             |
|                             |              | #40                | 389.60                  | 362.09               | 23.4          | 76.6             |
|                             |              | #60                | 381.07                  | 366.15               | 4.8           | 95.2             |
|                             |              | #140               | 344.94                  | 342.88               | 2.3           | 97.7             |
|                             |              | #200               | 345.28                  | 345.24               | 2.2           | 97.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 2.2

Weight of hydrometer sample = 80.22

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.4           | 99.6             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 0.4           | 99.6             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 0.4           | 99.6             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.3           | 99.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.3           | 99.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.3           | 99.7             |

## Fractional Components

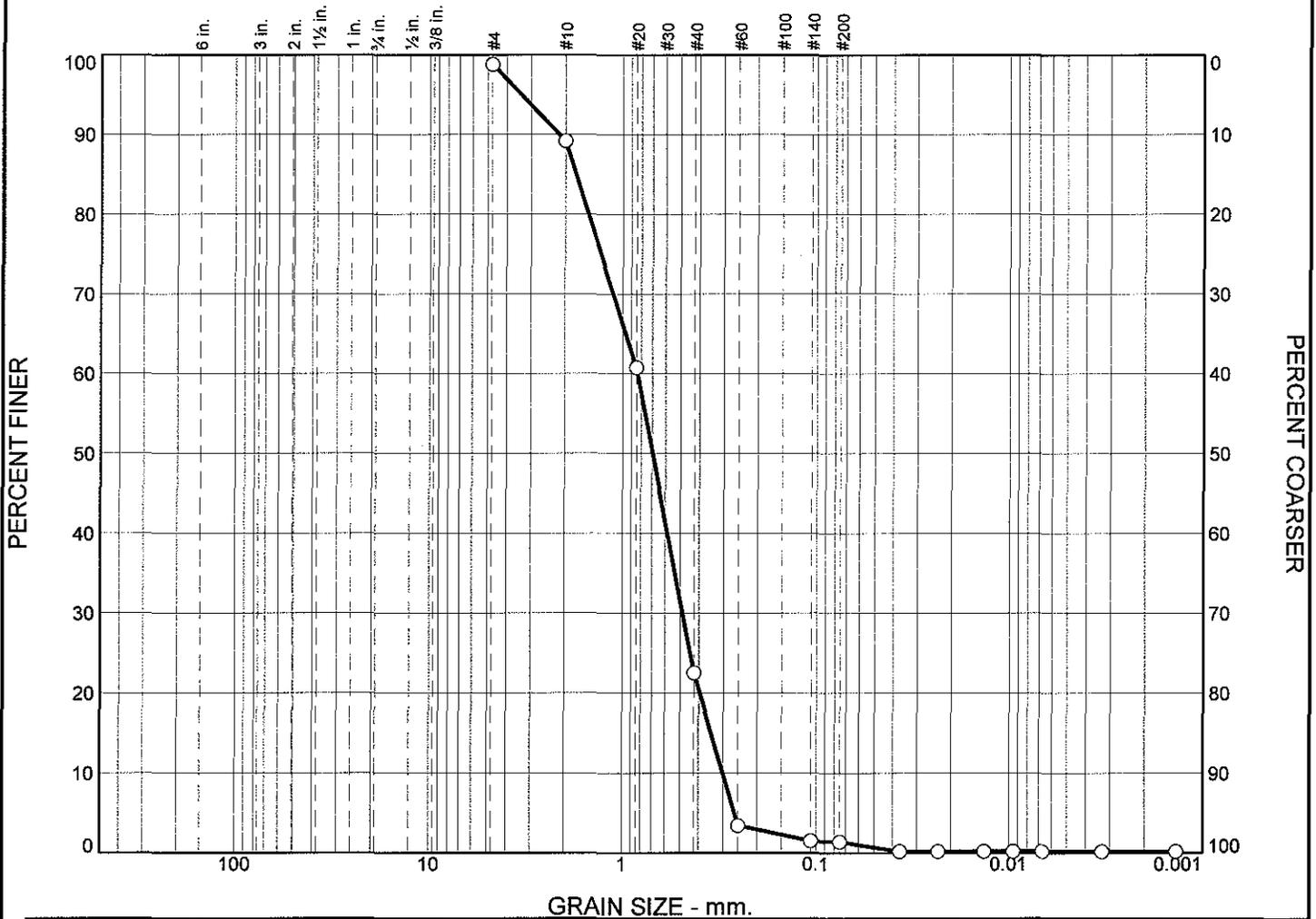
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 10.1     | 21.6    | 31.3 | 26.7 | 2.0  | 1.0     | 82.6  | 1.4  | 0.0  | 0.1  |         | 1.5  | 0.3   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.2896          | 0.3340          | 0.3852          | 0.4852          | 0.7269          | 0.9139          | 1.7358          | 2.0820          | 2.9405          | 4.1528          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.93             | 3.16           | 0.89           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 7.7        | 23.0    | 34.7   | 28.1   | 1.5    | 0.8     | 0.9    | 0.0  | 0.0  |         | 0.2    |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 1.7642    | 0.8381     | 0.6992  | 0.4866 | 0.3447 | 0.3000 | 0.94    | 2.79   |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502826    <b>Sample Number:</b> L0912911-16</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502826

Sample Number: L0912911-16

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 80.36                       | 0.00         | #4                 | 521.83                  | 520.87               | 98.8          | 1.2              |
|                             |              | #10                | 489.83                  | 482.08               | 89.2          | 10.8             |
|                             |              | #20                | 433.88                  | 411.07               | 60.8          | 39.2             |
|                             |              | #40                | 408.56                  | 377.83               | 22.5          | 77.5             |
|                             |              | #60                | 385.21                  | 369.86               | 3.4           | 96.6             |
|                             |              | #140               | 348.77                  | 347.20               | 1.5           | 98.5             |
|                             |              | #200               | 346.58                  | 346.51               | 1.4           | 98.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 1.4

Weight of hydrometer sample = 80.36

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 0.2           | 99.8             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.2           | 99.8             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.2           | 99.8             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.2           | 99.8             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.2           | 99.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.2           | 99.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.2           | 99.8             |

## Fractional Components

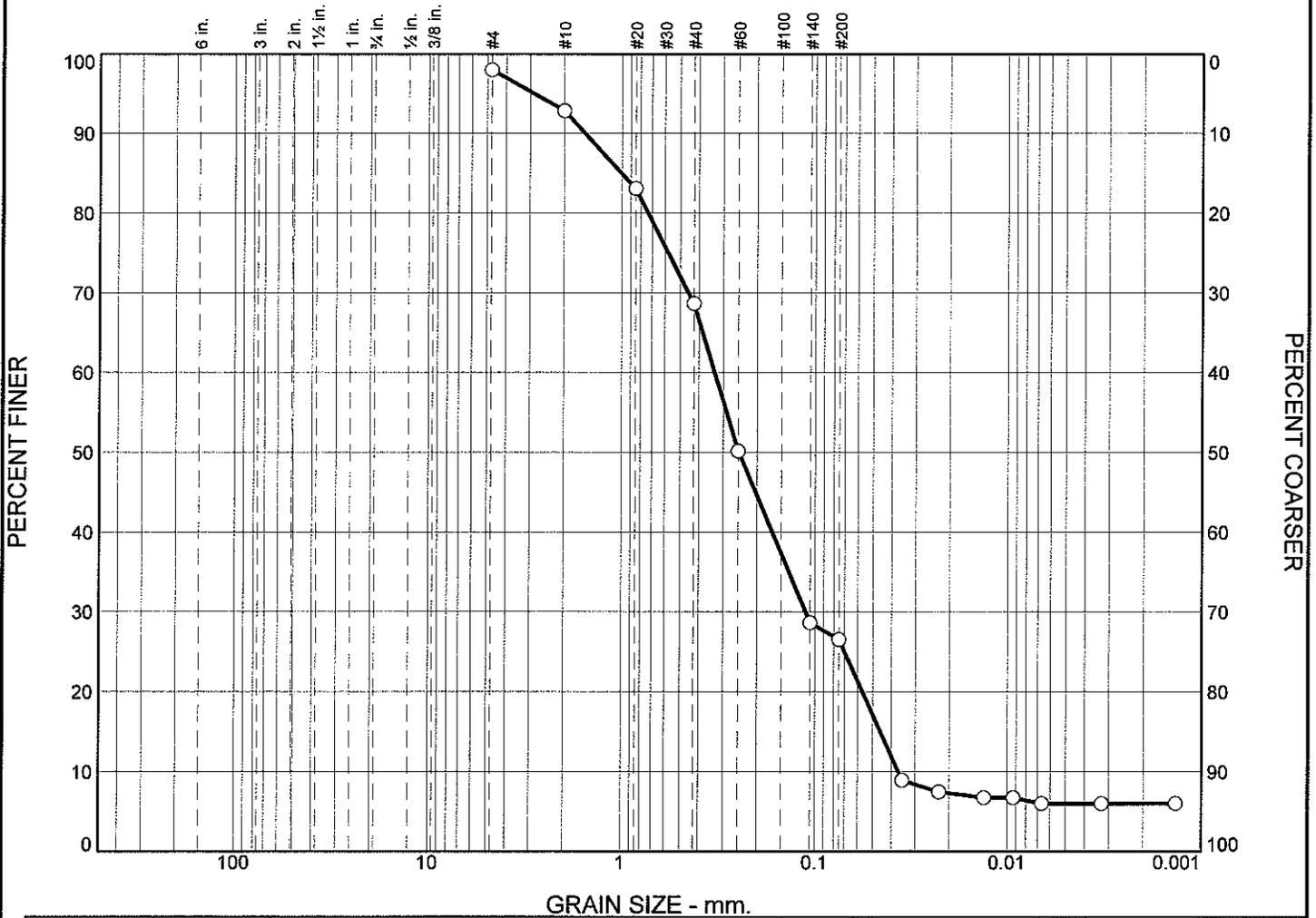
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.7      | 23.0    | 34.7 | 28.1 | 1.5  | 0.8     | 88.1  | 0.9  | 0.0  | 0.0  |         | 0.9   | 0.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.3000          | 0.3447          | 0.3961          | 0.4866          | 0.6992          | 0.8381          | 1.5174          | 1.7642          | 2.1563          | 3.3765          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.85             | 2.79           | 0.94           |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm.                    |           |           |                 |                 |                 |                 |                 |                 |                |                |      |         |        |
|-------------------------------------|-----------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|---------|--------|
| % Boulders                          | % Cobbles | % Pebbles | % Granules      | % Sand          |                 |                 |                 |                 | % Silt         |                |      |         | % Clay |
|                                     |           |           |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine         | Crs.           | Med.           | Fine | V. Fine |        |
| <input type="checkbox"/>            |           |           | 4.1             | 8.0             | 12.9            | 21.8            | 17.4            | 10.5            | 13.8           | 1.5            | 0.7  | 0.3     | 6.0    |
| <input checked="" type="checkbox"/> | LL        | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |         |        |
| <input type="checkbox"/>            |           |           | 1.0062          | 0.3317          | 0.2485          | 0.1119          | 0.0456          | 0.0368          | 1.03           | 9.01           |      |         |        |

| Material Description     | USCS | AASHTO |
|--------------------------|------|--------|
| <input type="checkbox"/> |      |        |

|   |   |
|---|---|
| <b>Project No.</b> L0912911 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="checkbox"/> <b>Source of Sample:</b> 502911 <b>Sample Number:</b> L0912911-17 | <b>Remarks:</b><br><br><br><p style="text-align: center;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502911

Sample Number: L0912911-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 58.36                       | 0.00         | #4                 | 522.91                  | 521.74               | 98.0          | 2.0              |
|                             |              | #10                | 487.76                  | 484.76               | 92.9          | 7.1              |
|                             |              | #20                | 411.09                  | 405.38               | 83.1          | 16.9             |
|                             |              | #40                | 370.52                  | 362.09               | 68.6          | 31.4             |
|                             |              | #60                | 376.93                  | 366.15               | 50.2          | 49.8             |
|                             |              | #140               | 355.44                  | 342.88               | 28.6          | 71.4             |
|                             |              | #200               | 346.47                  | 345.24               | 26.5          | 73.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 26.5

Weight of hydrometer sample = 58.36

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 8.9           | 91.1             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 7.5           | 92.5             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 6.7           | 93.3             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 6.7           | 93.3             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 6.0           | 94.0             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 6.0           | 94.0             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 6.0           | 94.0             |

## Fractional Components

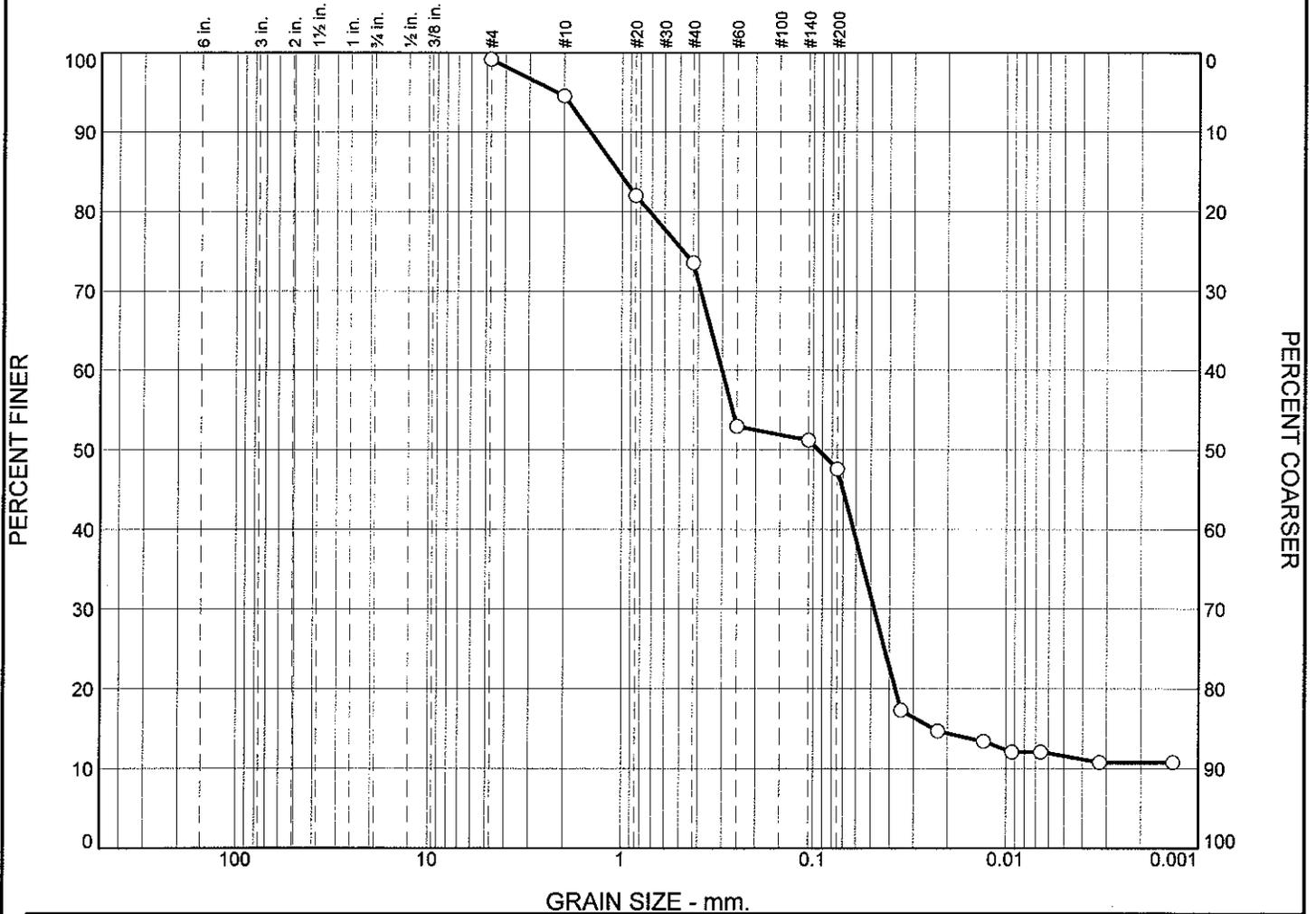
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.1      | 8.0     | 12.9 | 21.8 | 17.4 | 10.5    | 70.6  | 13.8 | 1.5  | 0.7  | 0.3     | 16.3  | 6.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0368          | 0.0456          | 0.0566          | 0.1119          | 0.2485          | 0.3317          | 0.7335          | 1.0062          | 1.5581          | 2.8695          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.52             | 9.01           | 1.03           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 3.6             | 10.2    | 8.9             | 22.5 | 1.4             | 11.2    | 23.8            | 2.8  | 1.7             | 1.0     | 11.1           |  |                |
| ⊗ | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 1.0425          |   | 0.2998          |         | 0.0944          |      | 0.0480          |         | 0.0236          |      |                 |         |                |  |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502912    <b>Sample Number:</b> L0912911-18</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912911  
**Location:** 502912  
**Sample Number:** L0912911-18  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 58.36                       | 0.00         | #4                 | 521.37                  | 520.87               | 99.1          | 0.9              |
|                             |              | #10                | 484.76                  | 482.08               | 94.6          | 5.4              |
|                             |              | #20                | 418.39                  | 411.07               | 82.0          | 18.0             |
|                             |              | #40                | 382.78                  | 377.83               | 73.5          | 26.5             |
|                             |              | #60                | 361.89                  | 349.89               | 53.0          | 47.0             |
|                             |              | #140               | 348.22                  | 347.20               | 51.2          | 48.8             |
|                             |              | #200               | 348.62                  | 346.51               | 47.6          | 52.4             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 47.6  
 Weight of hydrometer sample = 58.36  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 17.3          | 82.7             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 14.7          | 85.3             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 13.4          | 86.6             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 12.1          | 87.9             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 12.1          | 87.9             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 10.8          | 89.2             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 10.8          | 89.2             |

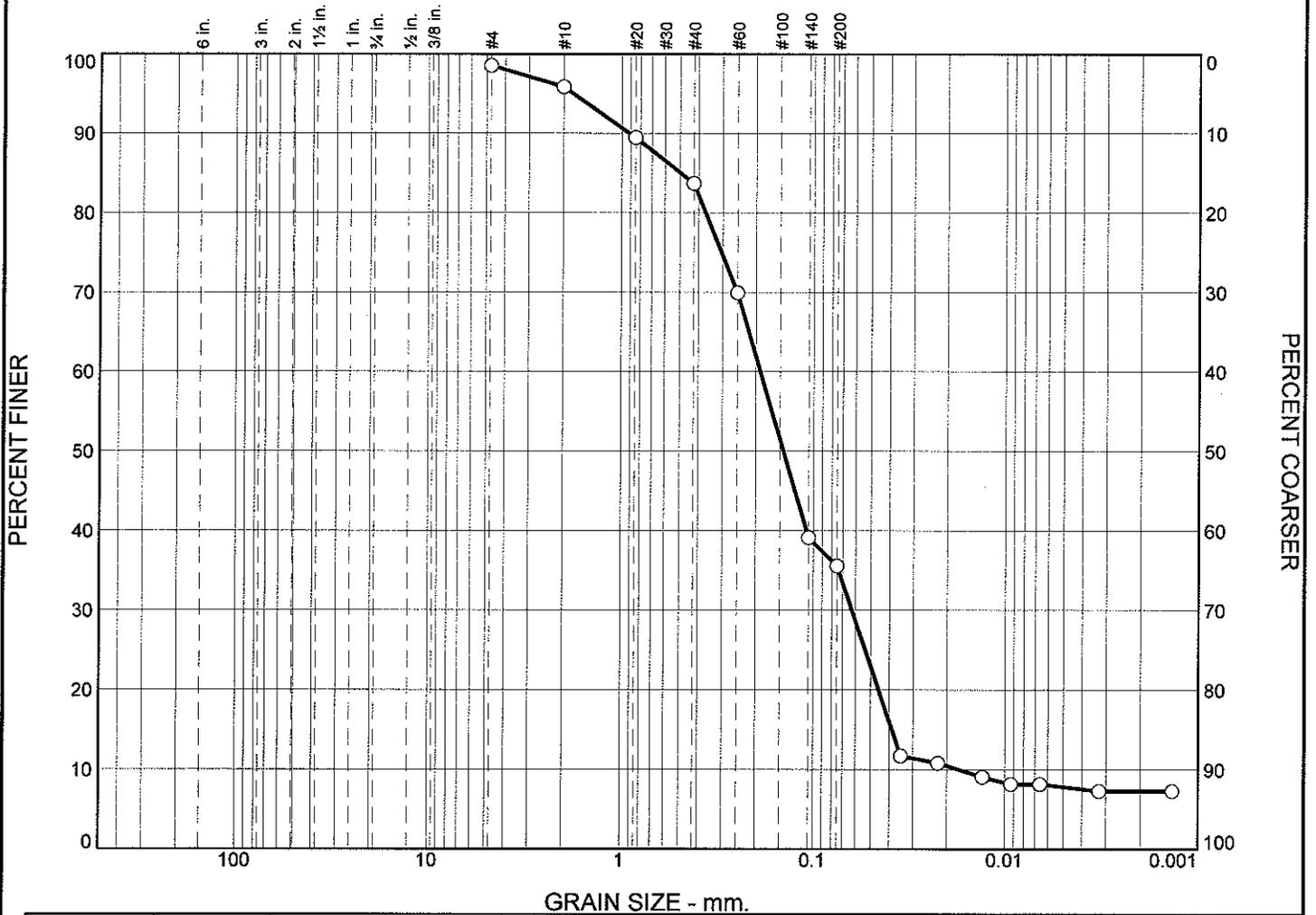
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.6      | 10.2    | 8.9  | 22.5 | 1.4  | 11.2    | 54.2  | 23.8 | 2.8  | 1.7  | 1.0     | 29.3  | 11.1 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0236 | 0.0372 | 0.0480 | 0.0944 | 0.2998 | 0.7213 | 1.0425 | 1.4662 | 2.1765 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 1.29                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |     |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|-----|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |     |                |
| ○ |          |   |         |   |                 |   | 2.1             | 5.2     | 5.6             | 15.2 | 24.9            | 15.1    | 18.4            | 1.9  | 1.5             | 0.6     |                | 7.5 |                |
| ⊗ | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |     | C <sub>u</sub> |
| ○ |          |   |         |   | 0.4966          |   | 0.1897          |         | 0.1436          |      | 0.0627          |         | 0.0387          |      | 0.0175          |         | 1.19           |     | 10.85          |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912911    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 502913    <b>Sample Number:</b> L0912911-19</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502913

Sample Number: L0912911-19

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 64.58                       | 0.00         | #4                 | 522.68                  | 521.74               | 98.5          | 1.5              |
|                             |              | #10                | 486.50                  | 484.76               | 95.9          | 4.1              |
|                             |              | #20                | 409.51                  | 405.38               | 89.5          | 10.5             |
|                             |              | #40                | 365.80                  | 362.09               | 83.7          | 16.3             |
|                             |              | #60                | 375.06                  | 366.15               | 69.9          | 30.1             |
|                             |              | #140               | 362.78                  | 342.88               | 39.1          | 60.9             |
|                             |              | #200               | 347.53                  | 345.24               | 35.6          | 64.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 35.6

Weight of hydrometer sample = 64.58

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 11.7          | 88.3             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 10.8          | 89.2             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 9.0           | 91.0             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 8.1           | 91.9             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 8.1           | 91.9             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 7.3           | 92.7             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 7.3           | 92.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.1      | 5.2     | 5.6  | 15.2 | 24.9 | 15.1    | 66.0  | 18.4 | 1.9  | 1.5  | 0.6     | 22.4  | 7.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0175          | 0.0387          | 0.0455          | 0.0627          | 0.1436          | 0.1897          | 0.3685          | 0.4966          | 0.9143          | 1.7850          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.00             | 10.85          | 1.19           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912911

Location: 502926

Sample Number: L0912911-20

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.09                       | 0.00         | #4                 | 526.99                  | 520.87               | 90.6          | 9.4              |
|                             |              | #10                | 483.83                  | 482.08               | 87.9          | 12.1             |
|                             |              | #20                | 414.42                  | 411.07               | 82.8          | 17.2             |
|                             |              | #40                | 380.87                  | 377.83               | 78.1          | 21.9             |
|                             |              | #60                | 377.14                  | 369.86               | 66.9          | 33.1             |
|                             |              | #140               | 364.52                  | 347.20               | 40.3          | 59.7             |
|                             |              | #200               | 349.02                  | 346.51               | 36.4          | 63.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 36.4

Weight of hydrometer sample = 65.09

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 12.8          | 87.2             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 11.9          | 88.1             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 10.1          | 89.9             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 9.2           | 90.8             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 8.3           | 91.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 7.4           | 92.6             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 7.4           | 92.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.2      | 4.2     | 4.5  | 12.3 | 21.5 | 14.5    | 57.0  | 18.3 | 1.9  | 2.0  | 1.1     | 23.3  | 7.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0126          | 0.0371          | 0.0437          | 0.0607          | 0.1449          | 0.2001          | 0.5641          | 1.2331          | 3.9191          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.34             | 15.94          | 1.47           |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

### **New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. **NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

*Air* (Organic Parameters: EPA TO-15)

**U.S. Army Corps of Engineers**

**Department of Defense** Certificate/Lab ID: L2217.01.

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.



# CHAIN OF CUSTODY

PAGE OF

Date Rec'd In Lab:

ALPHA Job #: 40912911

**Project Information**

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

**Turn-Around Time** Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
TEL: 508-898-9220 TEL: 508-822-9300  
FAX: 508-898-9193 FAX: 508-822-3288**Client Information**

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

 These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

**Report Information Data Deliverables** FAX  EMAIL  
 ADEx  Add'l Deliverables**Billing Information** Same as Client info PO #:**Regulatory Requirements/Report Limits**

State/Fed Program

Criteria

**ANALYSIS**

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 1                              | 502511    | 9/22/09    | 13:00 | SE            | HC                 |
| 2                              | 502512    | 9/22/09    | 13:30 | SE            | HC                 |
| 3                              | 502513    | 9/22/09    | 13:32 | SE            | HC                 |
|                                | 502525    | 9/22/09    | 13:58 | SE            | HC                 |
| 4                              | 502526    | 9/22/09    | 13:48 | SE            | HC                 |
|                                | 502527    | 9/22/09    | 13:48 | SE            | HC                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                  |               |                |               |
|------------------|---------------|----------------|---------------|
| Relinquished By: | Date/Time     | Received By:   | Date/Time     |
| <i>Hadri...</i>  | 9/22 18:56    | <i>Paul...</i> | 9/22 18:55    |
| <i>Paul...</i>   | 9/22/09 09:45 | <i>Paul...</i> | 9/22/09 9:15  |
| <i>Paul...</i>   | 9/22/09 10:25 | <i>Paul...</i> | 9/23/09 10:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until all ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Serial No: 08031016:18





Station 202

# CHAIN OF CUSTODY

PAGE 17 OF 41



Serial No: 081618

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

### Client Information

Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 Falmouth, MA 02536  
 Phone: 508-540-8080

### Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

### Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 20912911

### Report Information Data Deliverables Billing Information

FAX     EMAIL     Same as Client info    PO #:  
 ADEX     Add'l Deliverables

### Regulatory Requirements/Report Limits

| State/Fed Program | Criteria |
|-------------------|----------|
| fed               |          |

### ANALYSIS

| total PCB congeners NOAA 18 | TOC | grain size | archive |  |  |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below)<br><br>Sample Specific Comments | TOTAL # BOTTLES |          |   |
|-----------------------------|-----|------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------|----------|---|
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed chem | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed arch | 1 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 13 | 502811 | 9/26/09 | 17:21 | SE | HC |
| 14 | 502812 | 9/26/09 | 17:21 | SE | HC |
| 15 | 502813 | 9/26/09 | 17:24 | SE | HC |
|    | 502825 | 9/26/09 | 17:30 | SE | HC |
| 16 | 502826 | 9/26/09 | 17:30 | SE | HC |
|    | 502827 | 9/26/09 | 17:36 | SE | HC |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
|--------------------|---------------|--------------------|---------------|
| <i>[Signature]</i> | 9/26/09 19:12 | <i>[Signature]</i> | 9/26/09 19:17 |
| <i>[Signature]</i> | 9/28/09 09:53 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 204

# CHAIN OF CUSTODY

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Serial No 008

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 Falmouth, MA 02536  
 Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Date Rec'd In Lab:    ALPHA Job #: **L0912911**

**Report Information**    **Data Deliverables**    **Billing Information**

FAX     EMAIL     Same as Client info    PO #:

ADEX     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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**SAMPLE HANDLING**

**Filtration**

Done

Not Needed

Lab to do

**Preservation**

Lab to do

(Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 17 | 502911 | 9-27-09 | 14:12 | SE | HC |
| 18 | 502912 | 9-27-09 | 14:20 | SE | HC |
| 19 | 502913 | 9-27-09 | 14:25 | SE | HC |
|    | 502925 | 9-27-09 | 14:38 | SE | DB |
| 20 | 502926 | 9-27-09 | 14:38 | SE | DB |
|    | 502927 | 9-27-09 | 14:38 | SE | DB |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
|--------------------|---------------|--------------------|---------------|
| <i>[Signature]</i> | 9/27/09 16:10 | <i>[Signature]</i> | 9/27/09       |
| <i>[Signature]</i> | 9-28-09 09:13 | <i>[Signature]</i> | 9/28/09 9:15  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912912  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Phone:          | (508) 540-8080  |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 08/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912912-01                | 503011           | NEW BEDFORD, MA            | 09/27/09 13:25                  |
| L0912912-02                | 503012           | NEW BEDFORD, MA            | 09/27/09 13:30                  |
| L0912912-03                | 503013           | NEW BEDFORD, MA            | 09/27/09 13:33                  |
| L0912912-04                | 503026           | NEW BEDFORD, MA            | 09/27/09 13:42                  |
| L0912912-05                | 503111           | NEW BEDFORD, MA            | 09/26/09 15:20                  |
| L0912912-06                | 503112           | NEW BEDFORD, MA            | 09/26/09 15:20                  |
| L0912912-07                | 503113           | NEW BEDFORD, MA            | 09/26/09 15:20                  |
| L0912912-08                | 503126           | NEW BEDFORD, MA            | 09/26/09 15:40                  |
| L0912912-09                | 503211           | NEW BEDFORD, MA            | 09/27/09 13:42                  |
| L0912912-10                | 503212           | NEW BEDFORD, MA            | 09/27/09 14:05                  |
| L0912912-11                | 503213           | NEW BEDFORD, MA            | 09/27/09 14:12                  |
| L0912912-12                | 503226           | NEW BEDFORD, MA            | 09/27/09 13:50                  |
| L0912912-13                | 503311           | NEW BEDFORD, MA            | 09/26/09 13:55                  |
| L0912912-14                | 503312           | NEW BEDFORD, MA            | 09/26/09 13:55                  |
| L0912912-15                | 503313           | NEW BEDFORD, MA            | 09/26/09 13:55                  |
| L0912912-16                | 503326           | NEW BEDFORD, MA            | 09/26/09 14:02                  |
| L0912912-17                | 508136           | NEW BEDFORD, MA            | 09/26/09 14:15                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on February 3, 2010. The report was ammended to include revised Grain Size data.

### QC SAMPLES

The WG382947-1 Laboratory Duplicate RPD is outside the acceptance criteria for sieve, coarse sand (36%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**Case Narrative (continued)**

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Peter Henriksen

Title: Technical Director/Representative

Date: 08/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-01  
**Client ID:** 503011  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 13:25  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 56.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-02  
**Client ID:** 503012  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 13:30  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 20.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 36.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 9.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-03  
**Client ID:** 503013  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 13:33  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.600  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 14.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 20.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 42.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-04  
**Client ID:** 503026  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 13:42  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 27.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-05  
**Client ID:** 503111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 15:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 13.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 54.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 21.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 5.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-06  
**Client ID:** 503112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 15:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 39.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 6.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-07  
**Client ID:** 503113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 15:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 13.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 53.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 20.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 5.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-08  
**Client ID:** 503126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 15:40  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 13.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 51.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 21.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 5.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-09  
**Client ID:** 503211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 13:42  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.600  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 42.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 32.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-10  
**Client ID:** 503212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 14:05  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912912-11  
**Client ID:** 503213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 14:12  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 16.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 33.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.80   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912912-12  
**Client ID:** 503226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 13:50  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 15.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 25.9   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912912-13  
**Client ID:** 503311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 13:55  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.4   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 30.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912912-14  
**Client ID:** 503312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 13:55  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.0   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 51.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 30.2   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912912-15  
**Client ID:** 503313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 13:55  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.30   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.8   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 18.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912912-16  
**Client ID:** 503326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 14:02  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.10   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.700  |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.6   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 55.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.5   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912912-17  
**Client ID:** 508136  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 14:15  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.60   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.70   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.00   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.90   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.7   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.1   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 15.3   |           | %     | 0.100 | --  | 1               | -             | 10/05/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912912

Report Date: 08/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG382947-1 QC Sample: L0912912-12 Client ID: 503226 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 6.9           | 6.60             | %     | 4   |      | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 3.5           | 3.70             | %     | 6   |      | 20         |
| Coarse Sand (0.50-1.00 mm)   | 4.9           | 3.40             | %     | 36  | Q    | 20         |
| Medium Sand (0.25-0.50 mm)   | 10.8          | 10.5             | %     | 3   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 15.0          | 14.6             | %     | 3   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 17.2          | 16.9             | %     | 2   |      | 20         |
| Silt - (1.95-62.5 um)  | 25.9          | 29.3             | %     | 12  |      | 20         |
| Clay - (<1.95 um)  | 6.3           | 7.10             | %     | 12  |      | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912912

Project Number: TO-0018

Report Date: 08/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

## Cooler Information Custody Seal

## Cooler

|   |        |
|---|--------|
| B | Absent |
| C | Absent |
| F | Absent |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-01A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912912

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-02A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-03A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912912

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-04A | Glass 250ml unpreserved | C      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-05A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912912

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-06A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-07A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-08A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-09A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-10A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-11A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-12A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-13A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-14A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-15A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912912-16A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912912-17A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NI** - Not Ignitable.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.

**Report Format:** Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

*Data Qualifiers*

- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912912  
**Report Date:** 08/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

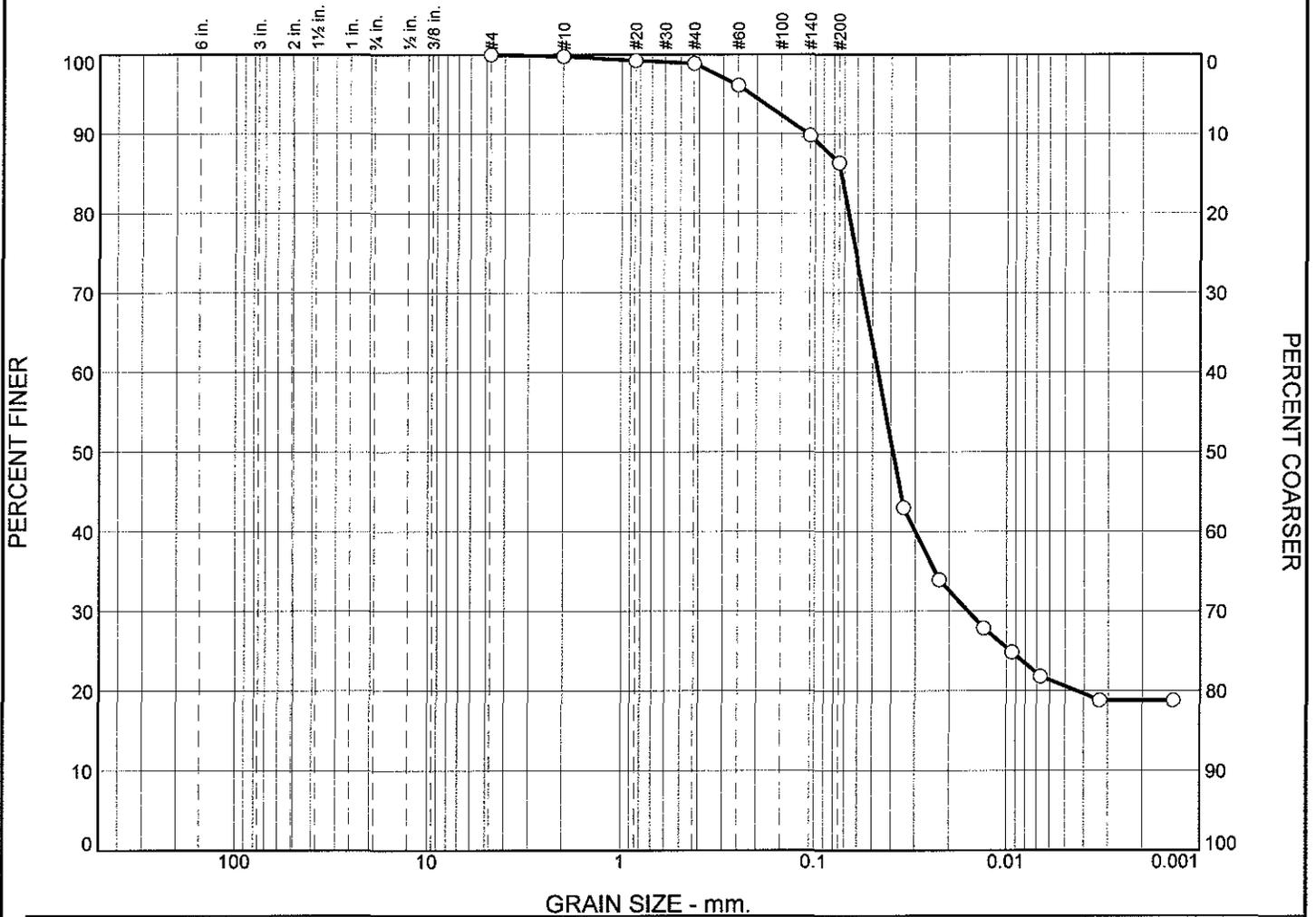
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# ASTM D422-63

## Wet Sieve Hydrometer

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | % Sand |          |         |      |      | % Silt |         |      |      | %   | Clay |
|---|----------|---|---------|---|---------|---|--------|----------|---------|------|------|--------|---------|------|------|-----|------|
|   |          |   |         |   |         |   | %      | Granules | V. Crs. | Crs. | Med. | Fine   | V. Fine | Crs. | Med. |     |      |
| ○ |          |   |         |   |         |   | 0.1    | 0.5      | 0.3     | 2.9  | 5.1  | 14.8   | 35.4    | 11.0 | 6.6  | 3.7 | 19.5 |

| × | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.0732          | 0.0467          | 0.0390          | 0.0159          |                 |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503011    <b>Sample Number:</b> L0912912-01</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503011

Sample Number: L0912912-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 10.35

Tare Wt. = 4.57

Minus #200 from wash = 87.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.82                       | 0.00         | #4                 | 521.78                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 484.90                  | 484.81               | 99.8          | 0.2              |
|                             |              | #20                | 405.67                  | 405.42               | 99.2          | 0.8              |
|                             |              | #40                | 362.91                  | 362.74               | 98.9          | 1.1              |
|                             |              | #60                | 367.43                  | 366.16               | 96.1          | 3.9              |
|                             |              | #140               | 345.71                  | 342.82               | 89.8          | 10.2             |
|                             |              | #200               | 346.83                  | 345.25               | 86.3          | 13.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 86.3

Weight of hydrometer sample = 45.82

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 43.0          | 57.0             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 33.9          | 66.1             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 27.9          | 72.1             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 24.9          | 75.1             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0067         | 21.8          | 78.2             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0  | 15.5       | 0.0033         | 18.8          | 81.2             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0  | 15.5       | 0.0014         | 18.8          | 81.2             |

## Fractional Components

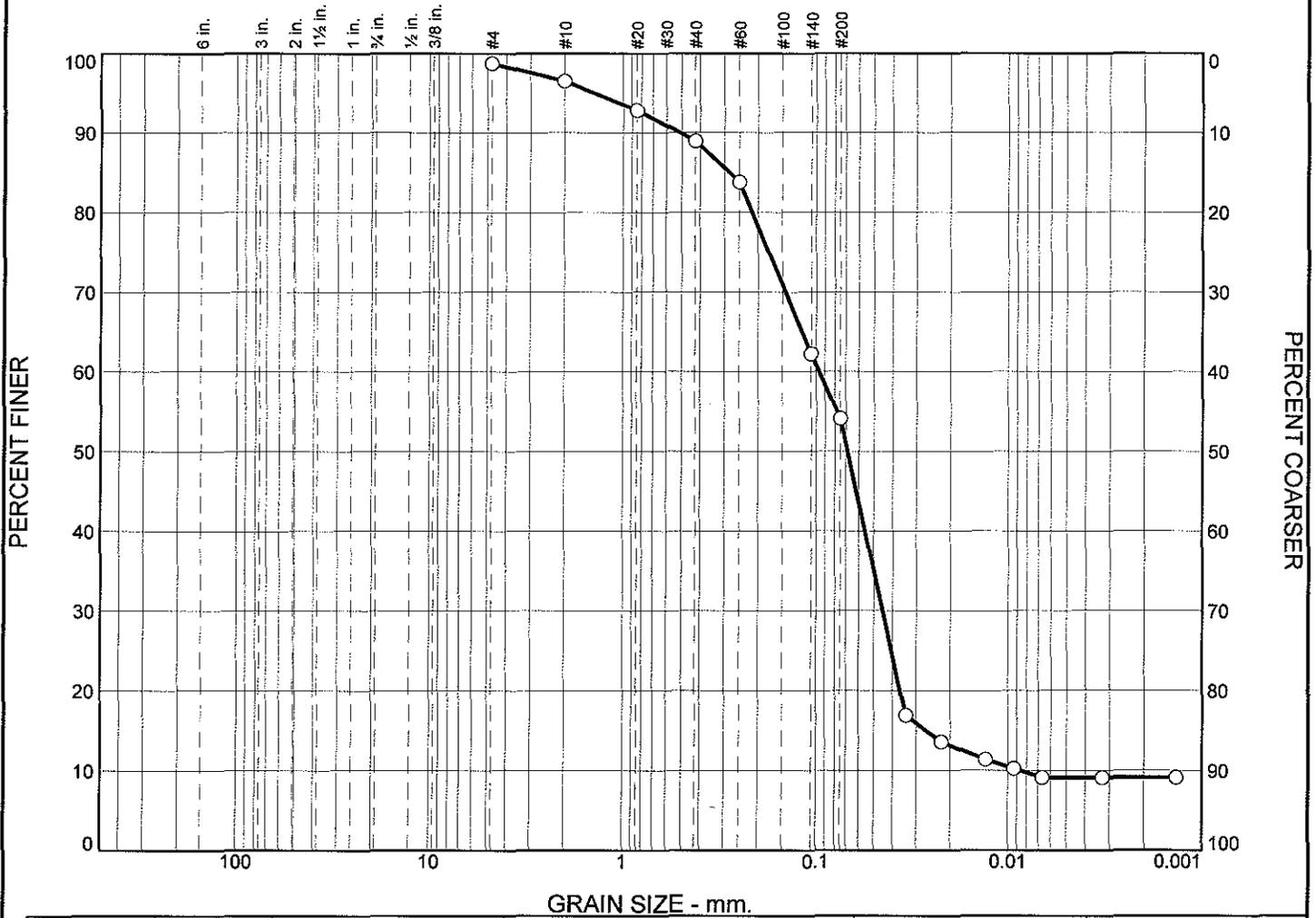
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.5     | 0.3  | 2.9  | 5.1  | 14.8    | 23.6  | 35.4 | 11.0 | 6.6  | 3.7     | 56.7  | 19.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0044          | 0.0159          | 0.0390          | 0.0467          | 0.0669          | 0.0732          | 0.1091          | 0.2154          |

| Fineness Modulus |
|------------------|
| 0.12             |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |           |           |          |         |        |        |        |         |        |       |      |         |        |
|------------------|-----------|-----------|----------|---------|--------|--------|--------|---------|--------|-------|------|---------|--------|
| % Boulders       | % Cobbles | % Pebbles | % Gravel | % Sand  |        |        |        |         | % Silt |       |      |         | % Clay |
|                  |           |           |          | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med.  | Fine | V. Fine |        |
| ○                |           |           | 1.8      | 3.0     | 3.6    | 6.1    | 17.4   | 20.9    | 29.3   | 4.1   | 2.5  | 0.5     | 9.1    |
| ⊗                | LL        | PL        | D85      | D60     | D50    | D30    | D15    | D10     | Cc     | Cu    |      |         |        |
| ○                |           |           | 0.2824   | 0.0963  | 0.0687 | 0.0450 | 0.0267 | 0.0087  | 2.42   | 11.09 |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503012    <b>Sample Number:</b> L0912912-02</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503012

Sample Number: L0912912-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 40.90  
 Tare Wt. = 4.55  
 Minus #200 from wash = 53.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 78.23                       | 0.00         | #4                 | 521.80                  | 520.81               | 98.7          | 1.3              |
|                             |              | #10                | 483.86                  | 482.11               | 96.5          | 3.5              |
|                             |              | #20                | 413.94                  | 411.09               | 92.9          | 7.1              |
|                             |              | #40                | 380.90                  | 377.86               | 89.0          | 11.0             |
|                             |              | #60                | 373.87                  | 369.84               | 83.8          | 16.2             |
|                             |              | #140               | 364.03                  | 347.17               | 62.3          | 37.7             |
|                             |              | #200               | 352.88                  | 346.51               | 54.1          | 45.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 54.1

Weight of hydrometer sample = 78.23

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 16.9          | 83.1             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 13.6          | 86.4             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 11.3          | 88.7             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 10.2          | 89.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 9.1           | 90.9             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 9.1           | 90.9             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 9.1           | 90.9             |

## Fractional Components

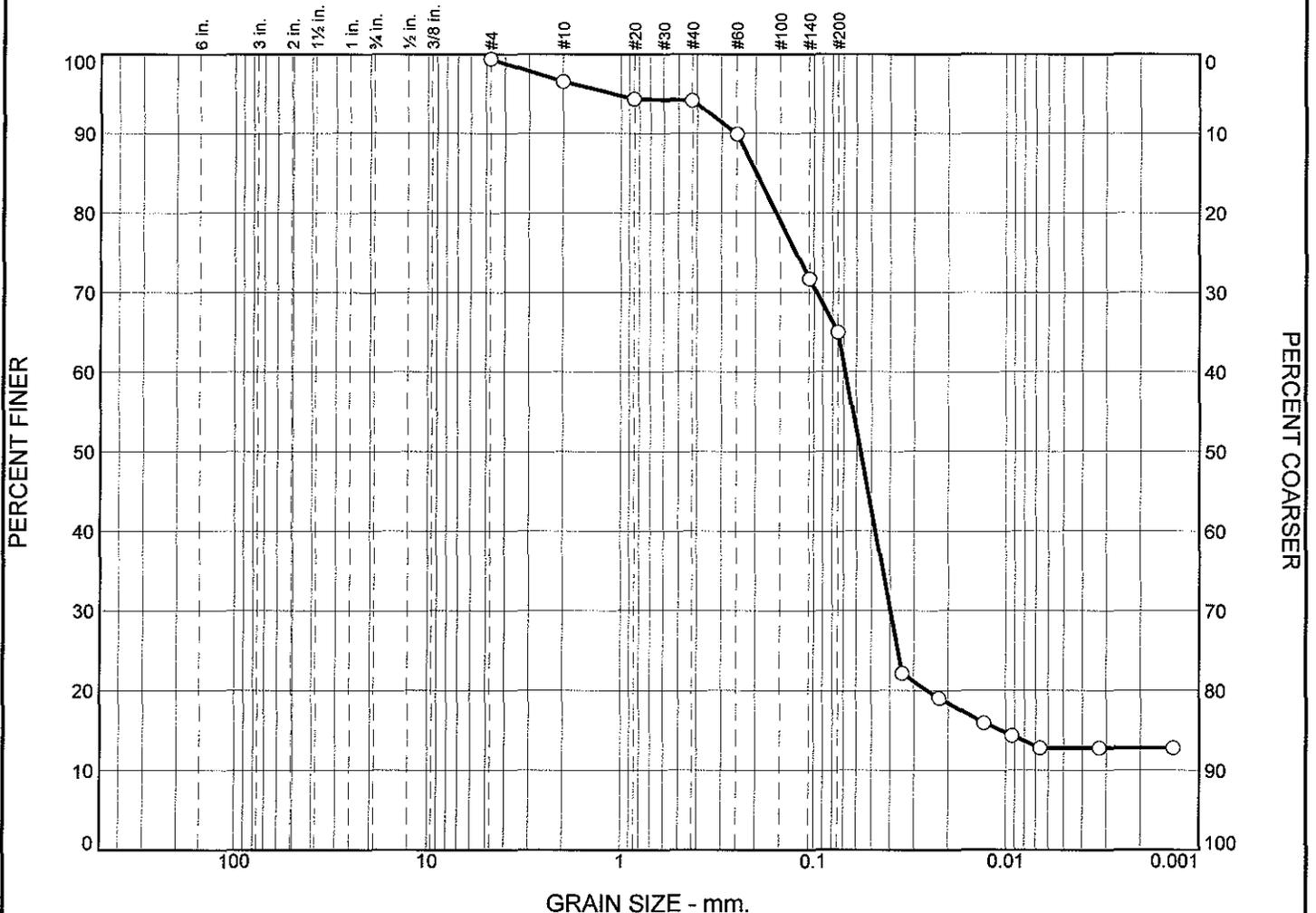
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.8      | 3.0     | 3.6  | 6.1  | 17.4 | 20.9    | 51.0  | 29.3 | 4.1  | 2.5  | 0.5     | 36.4  | 9.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0087          | 0.0267          | 0.0364          | 0.0450          | 0.0687          | 0.0963          | 0.2148          | 0.2824          | 0.5109          | 1.4069          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.63             | 11.09          | 2.42           |

Alpha Analytical

# Particle Size Distribution Report



| % Boulders | % Cobbles | % Pebbles | % Granules      | % Sand          |                 |                 |                 |                 | % Silt         |                |      |         | % Clay |
|------------|-----------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|---------|--------|
|            |           |           |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine         | Crs.           | Med.           | Fine | V. Fine |        |
| ○          |           |           | 2.3             | 1.7             | 0.6             | 4.3             | 14.7            | 20.3            | 33.5           | 4.5            | 3.4  | 0.7     | 12.8   |
| ×          | LL        | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |         |        |
| ○          |           |           | 0.1981          | 0.0685          | 0.0571          | 0.0397          | 0.0107          |                 |                |                |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                                   |
|--|-----------------------------------|
| <b>Project No.</b> L0912912 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 503013 <b>Sample Number:</b> L0912912-03 | <b>Remarks:</b><br><br><br>Figure |
| <b>Alpha Analytical</b><br><b>Mansfield, MA</b>  |                                   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503013

Sample Number: L0912912-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 30.68  
 Tare Wt. = 4.62  
 Minus #200 from wash = 61.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 66.99                       | 0.00         | #4                 | 522.18                  | 521.77               | 99.4          | 0.6              |
|                             |              | #10                | 486.73                  | 484.81               | 96.5          | 3.5              |
|                             |              | #20                | 406.86                  | 405.42               | 94.4          | 5.6              |
|                             |              | #40                | 362.88                  | 362.74               | 94.2          | 5.8              |
|                             |              | #60                | 368.99                  | 366.16               | 89.9          | 10.1             |
|                             |              | #140               | 355.01                  | 342.82               | 71.7          | 28.3             |
|                             |              | #200               | 349.79                  | 345.25               | 65.0          | 35.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 65.0

Weight of hydrometer sample = 66.99

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 22.1          | 77.9             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 19.0          | 81.0             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 15.9          | 84.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 14.3          | 85.7             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 12.8          | 87.2             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 12.8          | 87.2             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 12.8          | 87.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.3      | 1.7     | 0.6  | 4.3  | 14.7 | 20.3    | 41.6  | 33.5 | 4.5  | 3.4  | 0.7     | 42.1  | 12.8 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0107 | 0.0255 | 0.0397 | 0.0571 | 0.0685 | 0.1565 | 0.1981 | 0.2519 | 1.0913 |

Fineness Modulus

0.44

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503026

Sample Number: L0912912-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 62.38  
 Tare Wt. = 4.59  
 Minus #200 from wash = 39.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 94.73                       | 0.00         | #4                 | 526.77                  | 520.81               | 93.7          | 6.3              |
|                             |              | #10                | 487.08                  | 482.11               | 88.5          | 11.5             |
|                             |              | #20                | 416.89                  | 411.09               | 82.3          | 17.7             |
|                             |              | #40                | 384.16                  | 377.86               | 75.7          | 24.3             |
|                             |              | #60                | 376.61                  | 369.84               | 68.5          | 31.5             |
|                             |              | #140               | 367.56                  | 347.17               | 47.0          | 53.0             |
|                             |              | #200               | 353.18                  | 346.51               | 40.0          | 60.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 40.0

Weight of hydrometer sample = 94.73

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 10.3          | 89.7             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 8.3           | 91.7             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 6.9           | 93.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 6.2           | 93.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 5.6           | 94.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 5.6           | 94.4             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 5.6           | 94.4             |

## Fractional Components

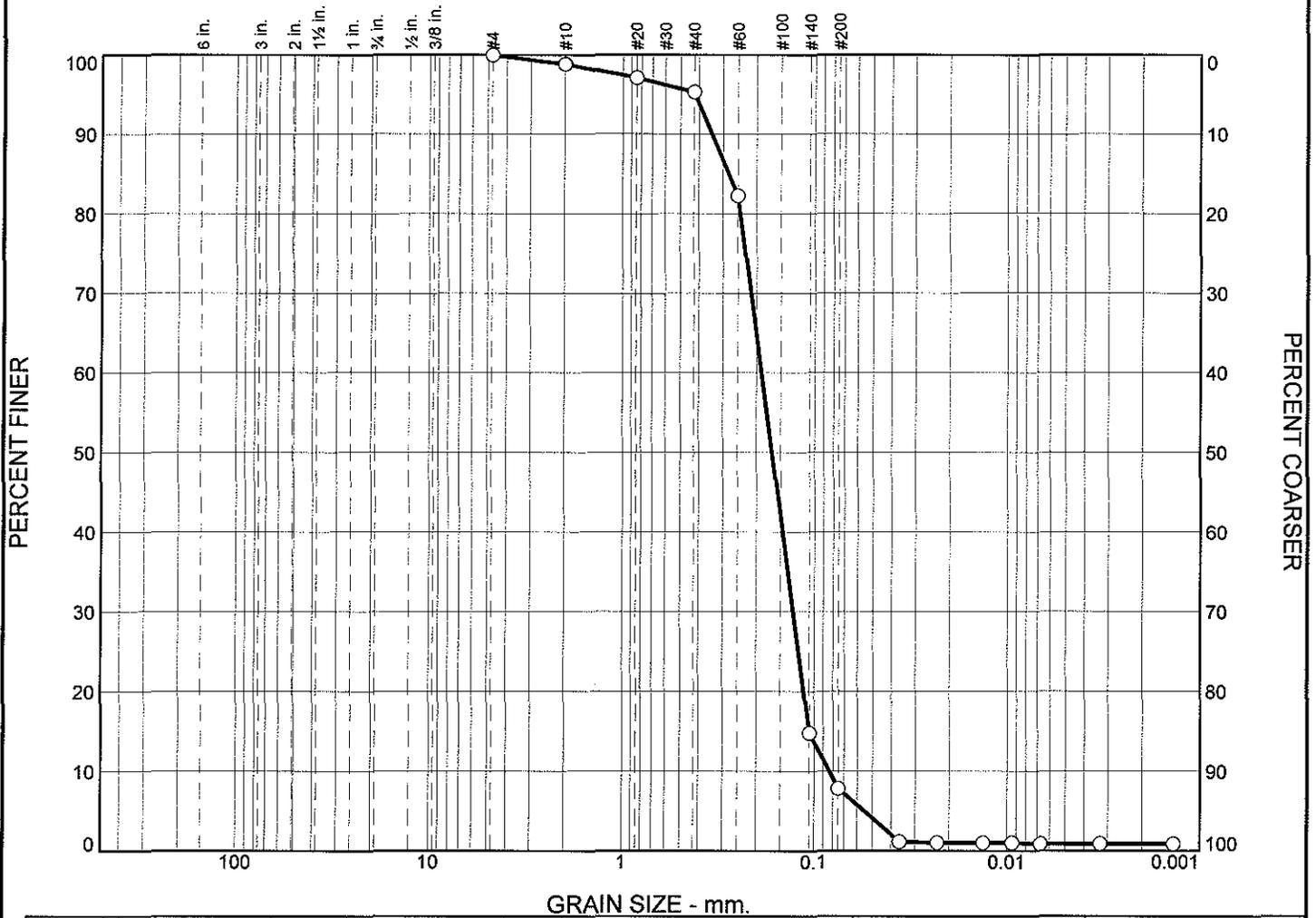
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.2      | 5.0     | 6.3  | 8.7  | 17.3 | 18.1    | 55.4  | 23.2 | 2.5  | 1.5  | 0.3     | 27.5  | 5.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0319          | 0.0386          | 0.0441          | 0.0575          | 0.1194          | 0.1779          | 0.6661          | 1.2328          | 2.5773          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.26             | 5.57           | 0.58           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % Sand     |         |      |      |      | % Silt  |      |      |      | % Clay |
|---|----------|---|---------|---|---------|------------|---------|------|------|------|---------|------|------|------|--------|
|   |          |   |         |   |         | % Granules | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        |
| ○ |          |   |         |   |         | 0.9        | 1.4     | 1.7  | 13.5 | 54.5 | 21.5    | 5.1  | 0.1  | 0.1  | 0.9    |

| × | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.2797          | 0.1884          | 0.1659          | 0.1286          | 0.1063          | 0.0836          | 1.05           | 2.25           |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503111    <b>Sample Number:</b> L0912912-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912912  
 Location: 503111  
 Sample Number: L0912912-05  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 100.34  
 Tare Wt. = 4.65  
 Minus #200 from wash = 5.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 101.46                      | 0.00         | #4                 | 521.81                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.98                  | 484.81               | 98.8          | 1.2              |
|                             |              | #20                | 407.17                  | 405.42               | 97.1          | 2.9              |
|                             |              | #40                | 364.56                  | 362.74               | 95.3          | 4.7              |
|                             |              | #60                | 379.40                  | 366.16               | 82.2          | 17.8             |
|                             |              | #140               | 411.27                  | 342.82               | 14.8          | 85.2             |
|                             |              | #200               | 352.31                  | 345.25               | 7.8           | 92.2             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 7.8  
 Weight of hydrometer sample = 101.46  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 1.1           | 98.9             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.0           | 99.0             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.0           | 99.0             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.0           | 99.0             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.9           | 99.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.9           | 99.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.9           | 99.1             |

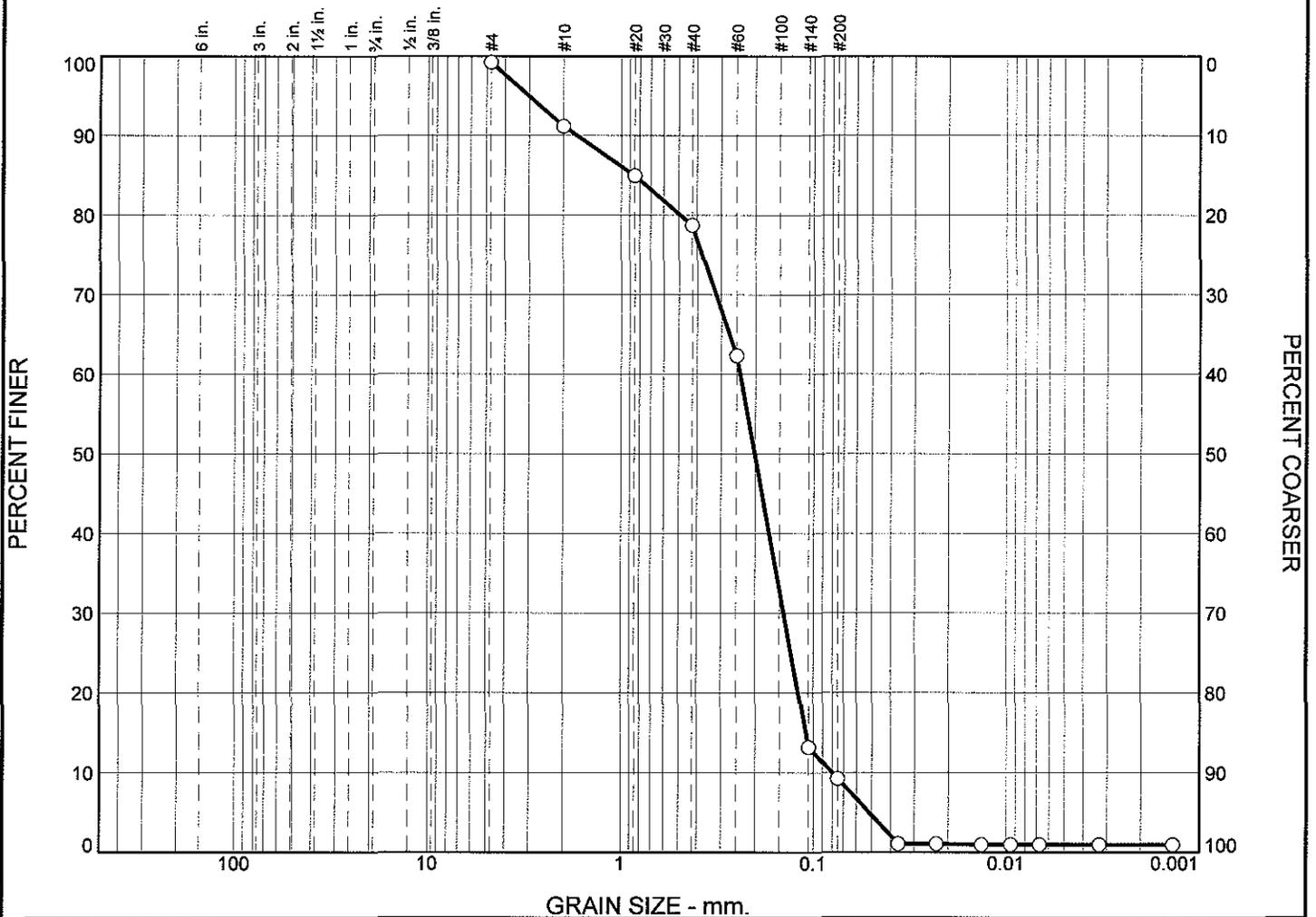
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 1.4     | 1.7  | 13.5 | 54.5 | 21.5    | 92.6  | 5.1  | 0.1  | 0.1  |         | 5.3   | 0.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0836          | 0.1063          | 0.1133          | 0.1286          | 0.1659          | 0.1884          | 0.2430          | 0.2797          | 0.3428          | 0.4200          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.78             | 2.25           | 1.05           |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                       | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|-----------------------|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|                       |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/> |            |           |           | 6.4        | 5.1     | 5.9  | 17.9 | 39.7 | 15.4    | 6.1    | 0.1  | 0.1  | 0.0     | 0.9    |

| <input checked="" type="checkbox"/> | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|-------------------------------------|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| <input type="radio"/>               |    |    | 0.8547          | 0.2400          | 0.2016          | 0.1422          | 0.1094          | 0.0802          | 1.05           | 2.99           |

| Material Description  |  |  |  |  |  |  |  | USCS | AASHTO |
|-----------------------|--|--|--|--|--|--|--|------|--------|
| <input type="radio"/> |  |  |  |  |  |  |  |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912912 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 503112 <b>Sample Number:</b> L0912912-06 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503112

Sample Number: L0912912-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 114.11

Tare Wt. = 4.68

Minus #200 from wash = 3.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 113.43                      | 0.00         | #4                 | 521.71                  | 520.81               | 99.2          | 0.8              |
|                             |              | #10                | 491.21                  | 482.11               | 91.2          | 8.8              |
|                             |              | #20                | 418.15                  | 411.09               | 85.0          | 15.0             |
|                             |              | #40                | 384.93                  | 377.86               | 78.7          | 21.3             |
|                             |              | #60                | 388.44                  | 369.84               | 62.3          | 37.7             |
|                             |              | #140               | 402.92                  | 347.17               | 13.2          | 86.8             |
|                             |              | #200               | 350.99                  | 346.51               | 9.2           | 90.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 9.2

Weight of hydrometer sample = 113.43

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 1.1           | 98.9             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.1           | 98.9             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.9           | 99.1             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.9           | 99.1             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.9           | 99.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.9           | 99.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.9           | 99.1             |

## Fractional Components

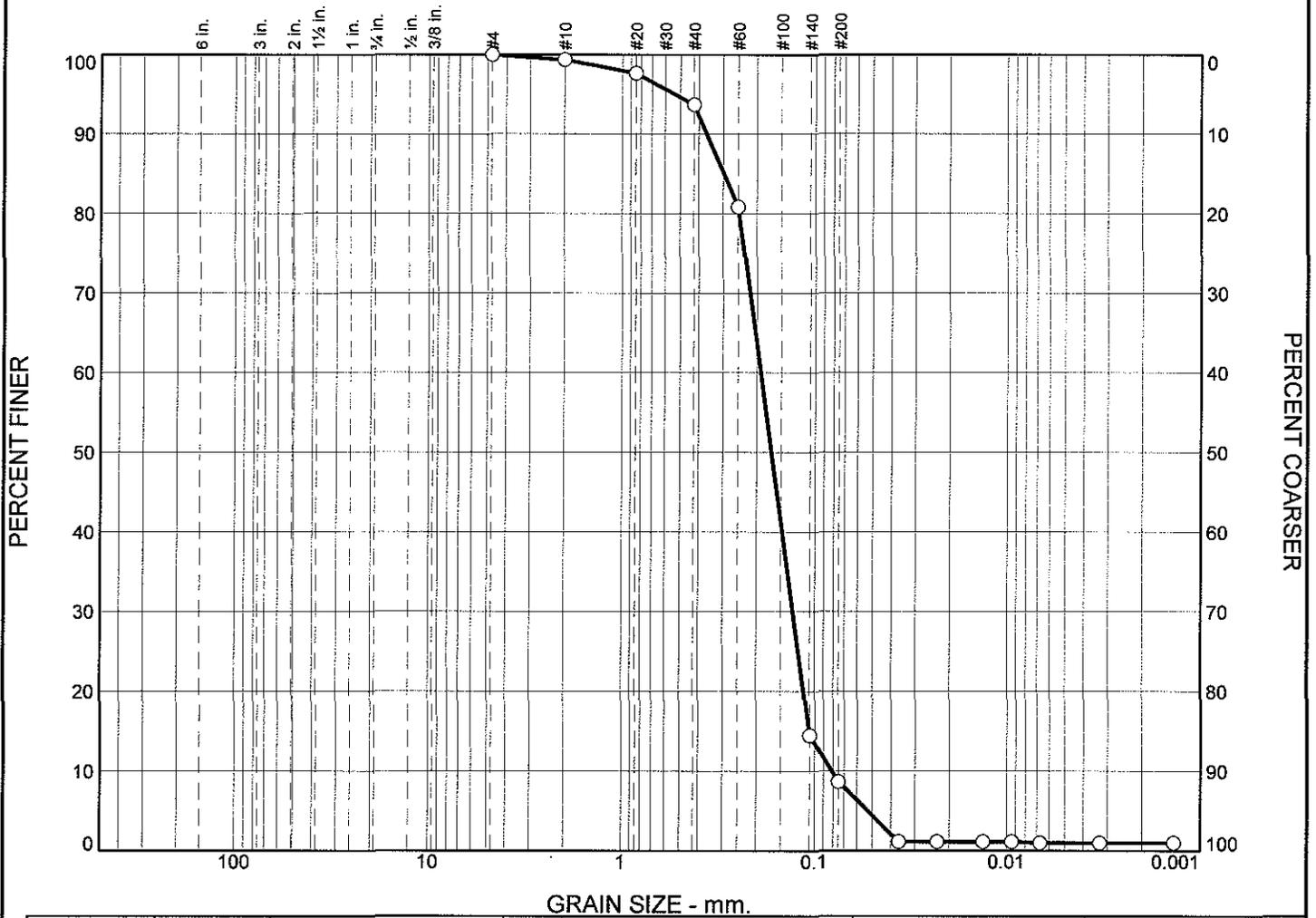
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.4      | 5.1     | 5.9  | 17.9 | 39.7 | 15.4    | 84.0  | 6.1  | 0.1  | 0.1  | 0.0     | 6.3   | 0.9  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0802 | 0.1094 | 0.1194 | 0.1422 | 0.2016 | 0.2400 | 0.4896 | 0.8547 | 1.6996 | 3.0180 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.38             | 2.99           | 1.05           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 0.5        | 1.4     | 3.4  | 13.8 | 53.6 | 20.4    | 5.7    | 0.0  | 0.0  | 0.1     | 1.0    |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○  |    | 0.2969 | 0.1910 | 0.1678 | 0.1296 | 0.1067 | 0.0813 | 1.08 | 2.35 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503113    <b>Sample Number:</b> L0912912-07</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503113

Sample Number: L0912912-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 98.33  
 Tare Wt. = 4.16  
 Minus #200 from wash = 5.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 99.61                       | 0.00         | #4                 | 521.79                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.43                  | 484.81               | 99.4          | 0.6              |
|                             |              | #20                | 407.12                  | 405.42               | 97.7          | 2.3              |
|                             |              | #40                | 366.68                  | 362.74               | 93.7          | 6.3              |
|                             |              | #60                | 378.97                  | 366.16               | 80.8          | 19.2             |
|                             |              | #140               | 408.94                  | 342.82               | 14.5          | 85.5             |
|                             |              | #200               | 351.04                  | 345.25               | 8.6           | 91.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 8.6

Weight of hydrometer sample = 99.61

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 1.1           | 98.9             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 1.1           | 98.9             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.1           | 98.9             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.1           | 98.9             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.0           | 99.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.0           | 99.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.0           | 99.0             |

## Fractional Components

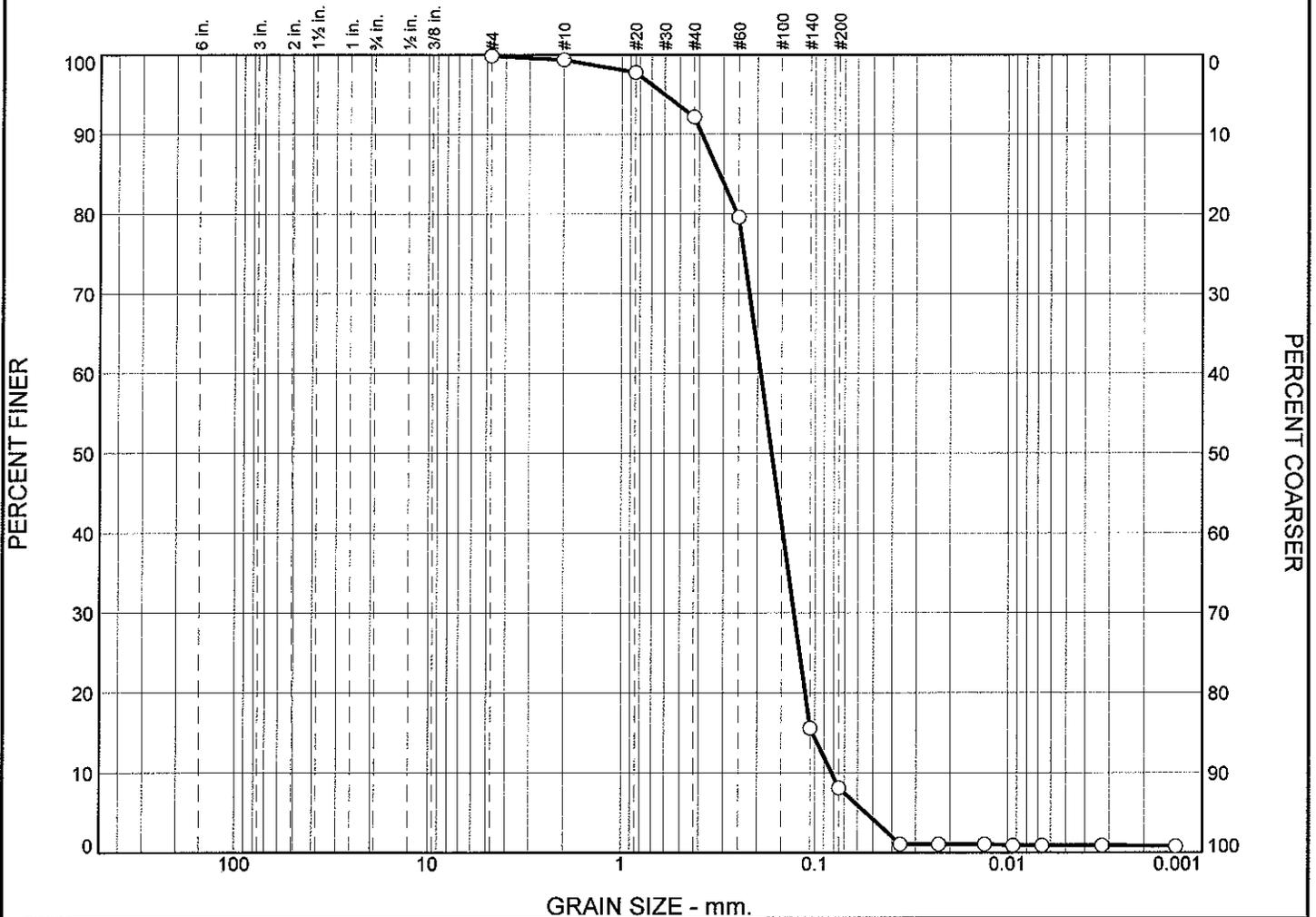
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.5      | 1.4     | 3.4  | 13.8 | 53.6 | 20.4    | 92.6  | 5.7  | 0.0  | 0.0  | 0.1     | 5.8   | 1.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0813          | 0.1067          | 0.1139          | 0.1296          | 0.1678          | 0.1910          | 0.2473          | 0.2969          | 0.3649          | 0.5342          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.80             | 2.35           | 1.08           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 0.4             | 1.3             | 4.6             | 13.9            | 51.7            | 21.6           | 5.3            | 0.0  | 0.1  | 0.0     | 0.9    |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.3138          | 0.1922          | 0.1681          | 0.1286          | 0.1032          | 0.0819          | 1.05           | 2.35           |      |      |         |        |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912912 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 503126 <b>Sample Number:</b> L0912912-08 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503126

Sample Number: L0912912-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 110.61  
 Tare Wt. = 4.81  
 Minus #200 from wash = 7.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 114.58                      | 0.00         | #4                 | 520.95                  | 520.81               | 99.9          | 0.1              |
|                             |              | #10                | 482.71                  | 482.11               | 99.4          | 0.6              |
|                             |              | #20                | 412.89                  | 411.09               | 97.8          | 2.2              |
|                             |              | #40                | 384.26                  | 377.86               | 92.2          | 7.8              |
|                             |              | #60                | 384.27                  | 369.84               | 79.6          | 20.4             |
|                             |              | #140               | 420.53                  | 347.17               | 15.6          | 84.4             |
|                             |              | #200               | 355.07                  | 346.51               | 8.1           | 91.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 8.1

Weight of hydrometer sample = 114.58

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 1.0           | 99.0             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 1.0           | 99.0             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 1.0           | 99.0             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 0.9           | 99.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 0.9           | 99.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 0.9           | 99.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.8           | 99.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 1.3     | 4.6  | 13.9 | 51.7 | 21.6    | 93.1  | 5.3  | 0.0  | 0.1  | 0.0     | 5.4   | 0.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0819          | 0.1032          | 0.1125          | 0.1286          | 0.1681          | 0.1922          | 0.2542          | 0.3138          | 0.3874          | 0.6018          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.82             | 2.35           | 1.05           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503211

Sample Number: L0912912-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 10.47  
 Tare Wt. = 4.50  
 Minus #200 from wash = 82.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 33.44                       | 0.00         | #4                 | 521.79                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.11                  | 484.81               | 99.0          | 1.0              |
|                             |              | #20                | 406.29                  | 405.42               | 96.4          | 3.6              |
|                             |              | #40                | 362.82                  | 362.74               | 96.2          | 3.8              |
|                             |              | #60                | 367.33                  | 366.16               | 92.7          | 7.3              |
|                             |              | #140               | 344.88                  | 342.82               | 86.5          | 13.5             |
|                             |              | #200               | 346.29                  | 345.25               | 83.4          | 16.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 83.4

Weight of hydrometer sample = 33.43

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 48.9          | 51.1             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 44.9          | 55.1             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0131         | 40.9          | 59.1             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0093         | 36.9          | 63.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 32.9          | 67.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 32.9          | 67.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 28.9          | 71.1             |

## Fractional Components

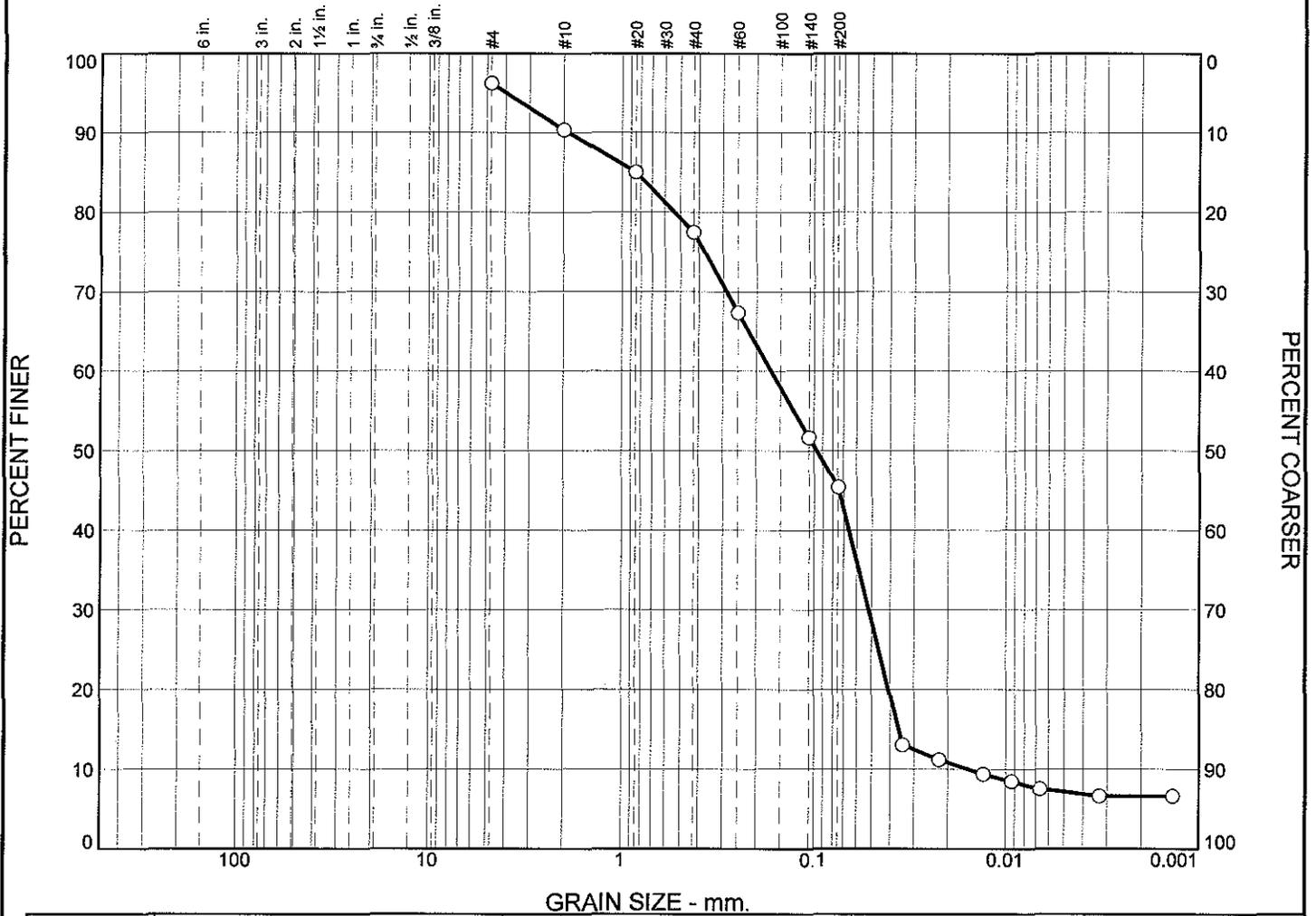
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 2.1     | 0.6  | 3.6  | 5.0  | 12.6    | 23.9  | 27.3 | 5.6  | 7.4  | 1.9     | 42.2  | 32.9 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0017 | 0.0359 | 0.0448 | 0.0695 | 0.0893 | 0.1716 | 0.3542 |

| Fineness Modulus |
|------------------|
| 0.24             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 4.7        | 4.3     | 6.9  | 11.9 | 12.6 | 16.9    | 25.2   | 2.6  | 2.0  | 1.2     | 6.8    |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu    |
|----|----|--------|--------|--------|--------|--------|--------|------|-------|
| ○  |    | 0.8461 | 0.1673 | 0.0966 | 0.0518 | 0.0361 | 0.0157 | 1.02 | 10.65 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 503212    <b>Sample Number:</b> L0912912-10</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p><br><br><br><br><br><p style="text-align: center;"><b>Figure</b></p> |
|--|--|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503212

Sample Number: L0912912-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 48.67  
 Tare Wt. = 4.77  
 Minus #200 from wash = 44.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 79.60                       | 0.00         | #4                 | 523.81                  | 520.81               | 96.2          | 3.8              |
|                             |              | #10                | 486.77                  | 482.11               | 90.4          | 9.6              |
|                             |              | #20                | 415.33                  | 411.09               | 85.1          | 14.9             |
|                             |              | #40                | 383.90                  | 377.86               | 77.5          | 22.5             |
|                             |              | #60                | 377.91                  | 369.84               | 67.3          | 32.7             |
|                             |              | #140               | 359.63                  | 347.17               | 51.7          | 48.3             |
|                             |              | #200               | 351.47                  | 346.51               | 45.4          | 54.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 45.4

Weight of hydrometer sample = 79.60

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 13.0          | 87.0             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 11.2          | 88.8             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 9.4           | 90.6             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 8.4           | 91.6             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 7.5           | 92.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 6.6           | 93.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 6.6           | 93.4             |

## Fractional Components

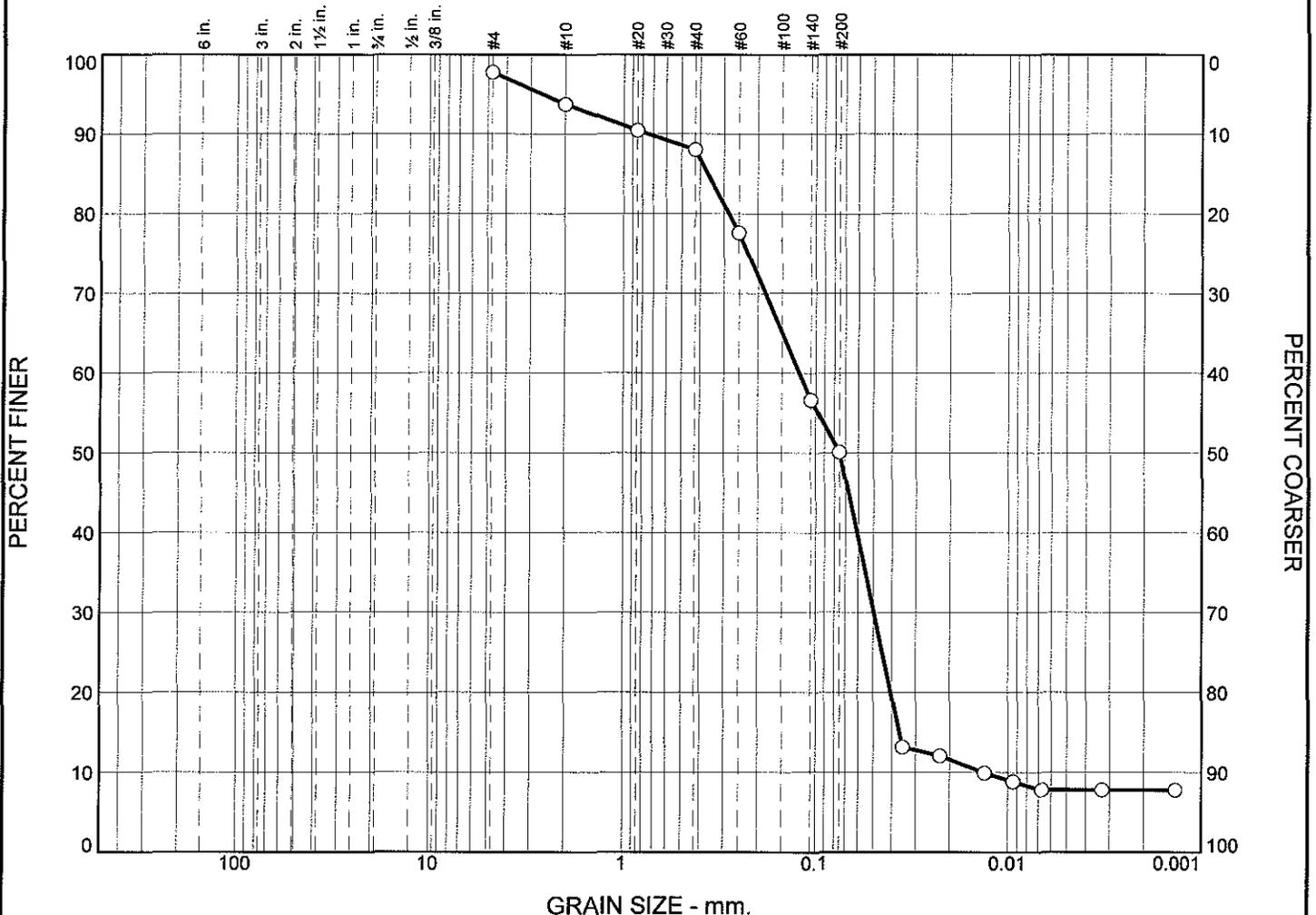
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.7      | 4.3     | 6.9  | 11.9 | 12.6 | 16.9    | 52.6  | 25.2 | 2.6  | 2.0  | 1.2     | 31.0  | 6.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0157          | 0.0361          | 0.0407          | 0.0518          | 0.0966          | 0.1673          | 0.5359          | 0.8461          | 1.8825          | 3.9600          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.15             | 10.65          | 1.02           |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 3.2        | 2.7     | 2.5  | 11.0 | 16.9 | 19.5    | 28.4   | 2.2  | 2.4  | 0.4     | 7.8    |

| × | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.3641          | 0.1216          | 0.0749          | 0.0497          | 0.0365          | 0.0135          | 1.50           | 9.02           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503213    <b>Sample Number:</b> L0912912-11</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503213

Sample Number: L0912912-11

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 44.17  
 Tare Wt. = 4.64  
 Minus #200 from wash = 47.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 74.76                       | 0.00         | #4                 | 523.43                  | 521.77               | 97.8          | 2.2              |
|                             |              | #10                | 487.82                  | 484.81               | 93.8          | 6.2              |
|                             |              | #20                | 407.89                  | 405.42               | 90.4          | 9.6              |
|                             |              | #40                | 364.54                  | 362.74               | 88.0          | 12.0             |
|                             |              | #60                | 373.96                  | 366.16               | 77.6          | 22.4             |
|                             |              | #140               | 358.49                  | 342.82               | 56.6          | 43.4             |
|                             |              | #200               | 350.16                  | 345.25               | 50.1          | 49.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 50.1

Weight of hydrometer sample = 74.76

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 13.1          | 86.9             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0224         | 12.1          | 87.9             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 9.9           | 90.1             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 8.8           | 91.2             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 7.8           | 92.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 7.8           | 92.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 7.8           | 92.2             |

## Fractional Components

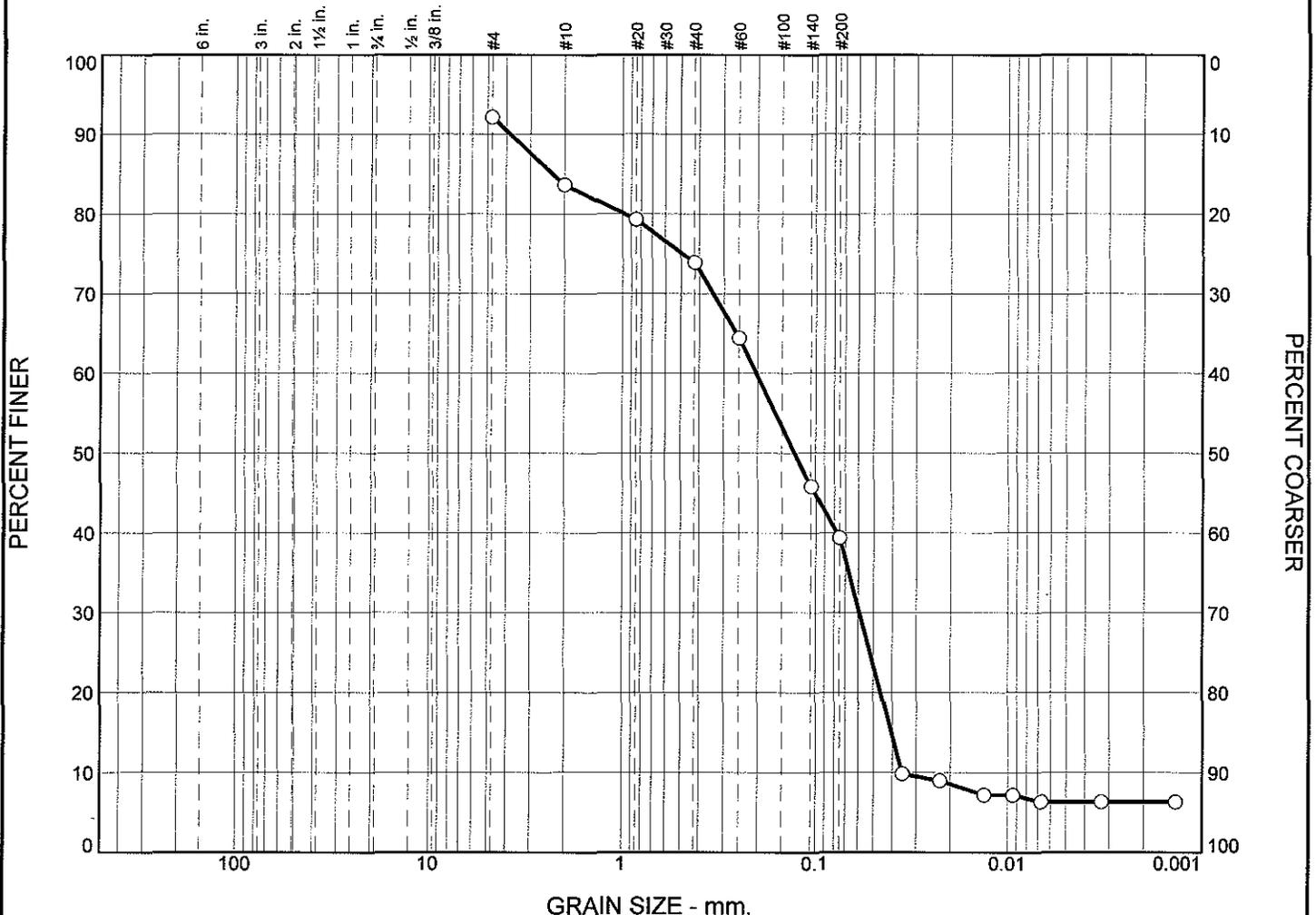
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.2      | 2.7     | 2.5  | 11.0 | 16.9 | 19.5    | 52.6  | 28.4 | 2.2  | 2.4  | 0.4     | 33.4  | 7.8  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0135 | 0.0365 | 0.0404 | 0.0497 | 0.0749 | 0.1216 | 0.2823 | 0.3641 | 0.7468 | 2.6143 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.80             | 9.02           | 1.50           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 6.9        | 3.5     | 4.9  | 10.8 | 15.0 | 17.2    | 22.6   | 1.9  | 1.0  | 0.4     | 6.3    |

| X | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|---|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○ |    |    | 2.2950 | 0.2037 | 0.1285 | 0.0591 | 0.0404 | 0.0356 | 0.48 | 5.72 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503226    <b>Sample Number:</b> L0912912-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503226

Sample Number: L0912912-12

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 48.79  
 Tare Wt. = 4.79  
 Minus #200 from wash = 39.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 72.11                       | 0.00         | #4                 | 526.48                  | 520.81               | 92.1          | 7.9              |
|                             |              | #10                | 488.23                  | 482.11               | 83.6          | 16.4             |
|                             |              | #20                | 414.22                  | 411.09               | 79.3          | 20.7             |
|                             |              | #40                | 381.75                  | 377.86               | 73.9          | 26.1             |
|                             |              | #60                | 376.67                  | 369.84               | 64.4          | 35.6             |
|                             |              | #140               | 360.59                  | 347.17               | 45.8          | 54.2             |
|                             |              | #200               | 351.17                  | 346.51               | 39.4          | 60.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 39.4

Weight of hydrometer sample = 72.11

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 9.8           | 90.2             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 9.0           | 91.0             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 7.2           | 92.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 7.2           | 92.8             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 6.3           | 93.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 6.3           | 93.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.3           | 93.7             |

## Fractional Components

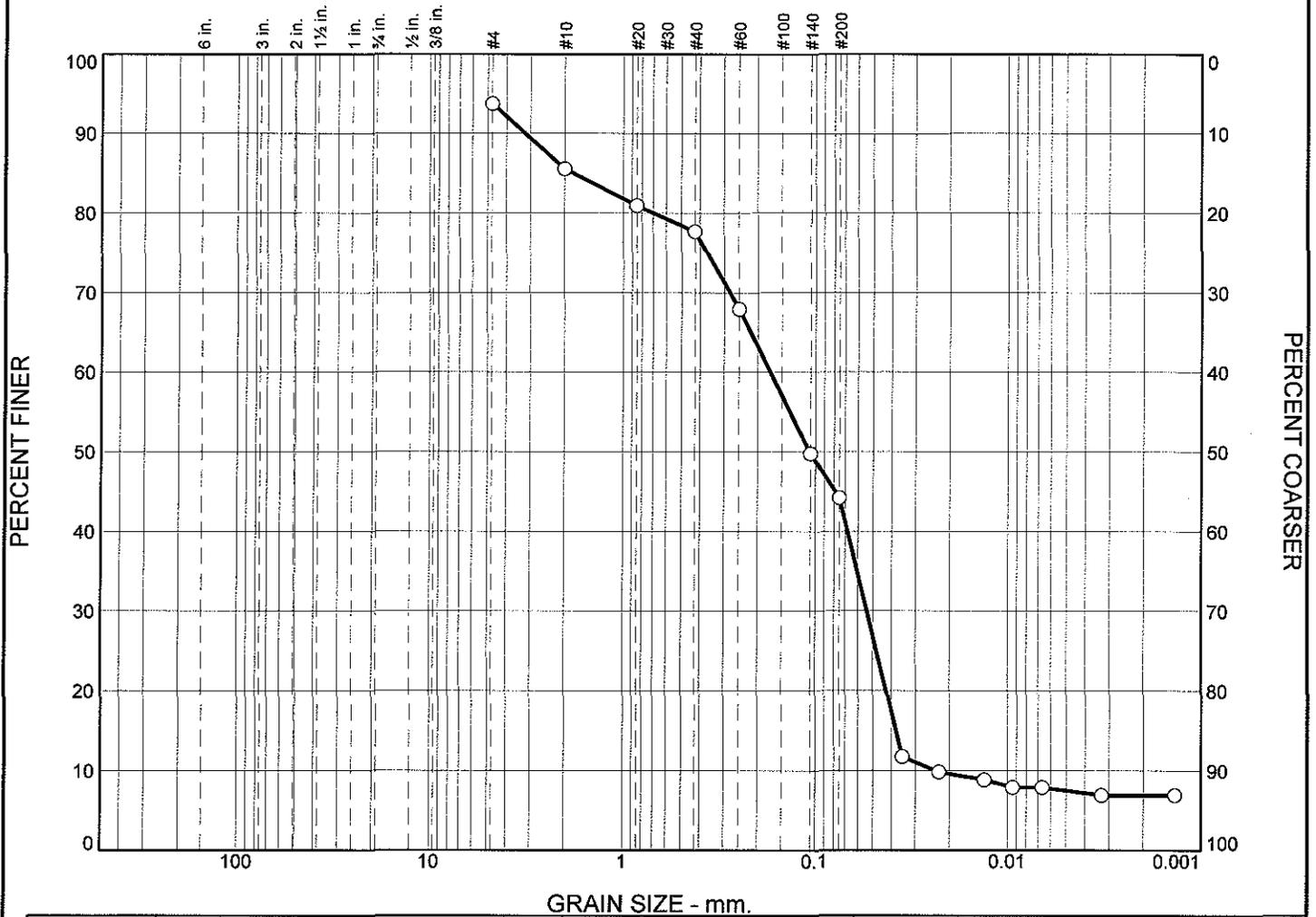
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.9      | 3.5     | 4.9  | 10.8 | 15.0 | 17.2    | 51.4  | 22.6 | 1.9  | 1.0  | 0.4     | 25.9  | 6.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0356          | 0.0404          | 0.0459          | 0.0591          | 0.1285          | 0.2037          | 0.9740          | 2.2950          | 3.8203          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.44             | 5.72           | 0.48           |

Alpha Analytical

# Particle Size Distribution Report



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503226

Sample Number: WG382947-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 47.84  
 Tare Wt. = 4.59  
 Minus #200 from wash = 41.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 74.02                       | 0.00         | #4                 | 526.39                  | 521.77               | 93.8          | 6.2              |
|                             |              | #10                | 490.89                  | 484.81               | 85.5          | 14.5             |
|                             |              | #20                | 408.83                  | 405.42               | 80.9          | 19.1             |
|                             |              | #40                | 365.16                  | 362.74               | 77.7          | 22.3             |
|                             |              | #60                | 373.38                  | 366.16               | 67.9          | 32.1             |
|                             |              | #140               | 356.23                  | 342.82               | 49.8          | 50.2             |
|                             |              | #200               | 349.39                  | 345.25               | 44.2          | 55.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 44.2

Weight of hydrometer sample = 74.02

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times Rm$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 11.7          | 88.3             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 9.8           | 90.2             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 8.8           | 91.2             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 7.9           | 92.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 7.9           | 92.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 6.9           | 93.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.9           | 93.1             |

## Fractional Components

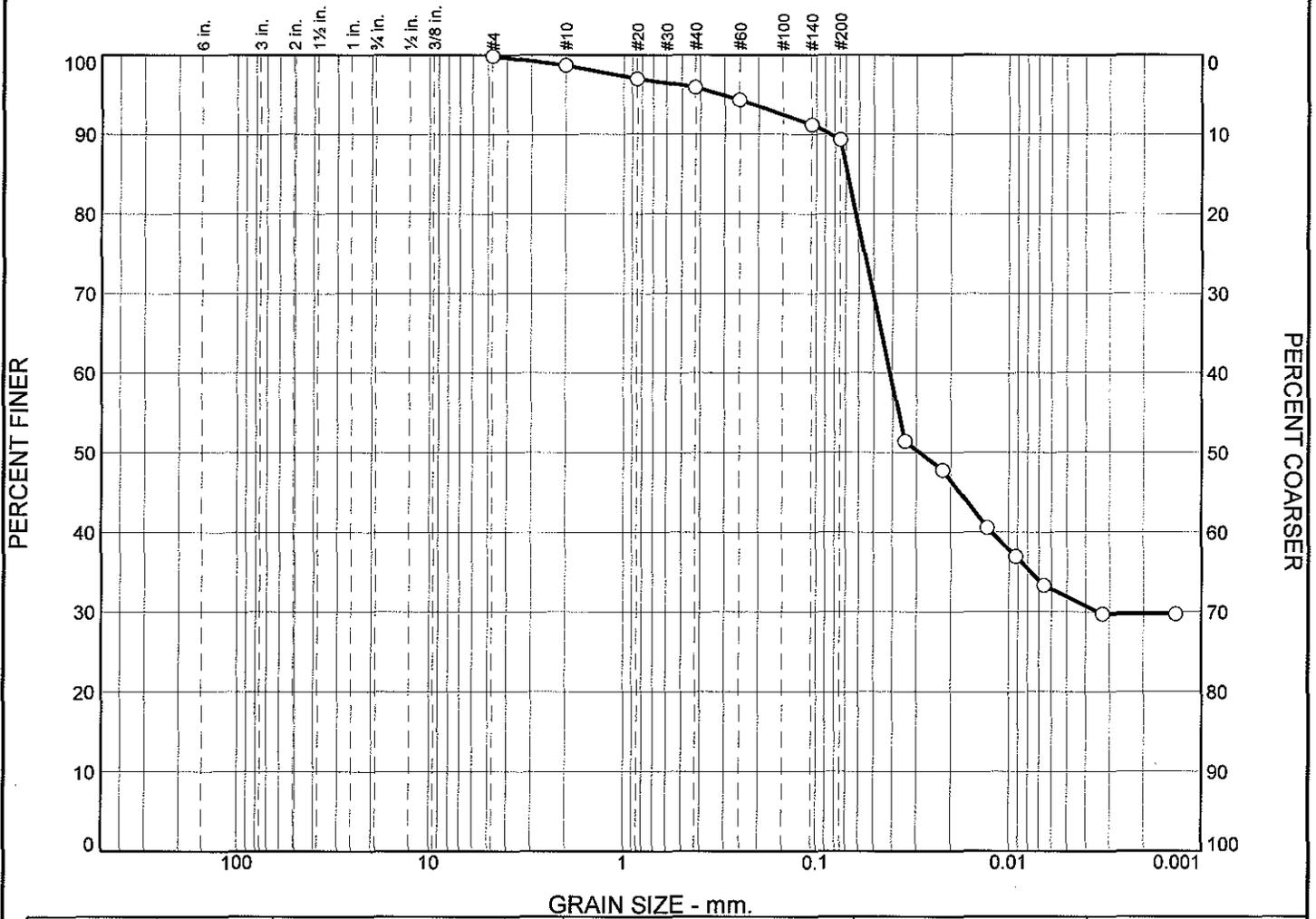
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.6      | 3.7     | 3.4  | 10.5 | 14.6 | 16.9    | 49.1  | 25.2 | 2.1  | 1.2  | 0.8     | 29.3  | 7.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0237          | 0.0379          | 0.0426          | 0.0538          | 0.1070          | 0.1719          | 0.6968          | 1.8076          | 3.1974          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.29             | 7.25           | 0.71           |

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# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders               | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|--------------------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|                          |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="checkbox"/> |           |           | 0.9        | 1.4     | 1.1  | 1.9  | 2.5  | 11.4    | 29.8   | 7.5  | 8.0  | 4.5     | 30.6   |

| <input checked="" type="checkbox"/> LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|--|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| <input type="checkbox"/>               |    | 0.0687          | 0.0411          | 0.0289          | 0.0034          |                 |                 |                |                |

| Material Description     | USCS | AASHTO |
|--------------------------|------|--------|
| <input type="checkbox"/> |      |        |

|   |                             |
|---|-----------------------------|
| <b>Project No.</b> L0912912 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="checkbox"/> <b>Source of Sample:</b> 503311 <b>Sample Number:</b> L0912912-13 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>   |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503311

Sample Number: L0912912-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.70  
 Tare Wt. = 4.57  
 Minus #200 from wash = 89.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 39.65                       | 0.00         | #4                 | 520.87                  | 520.81               | 99.8          | 0.2              |
|                             |              | #10                | 482.58                  | 482.11               | 98.7          | 1.3              |
|                             |              | #20                | 411.74                  | 411.09               | 97.0          | 3.0              |
|                             |              | #40                | 378.29                  | 377.86               | 95.9          | 4.1              |
|                             |              | #60                | 370.48                  | 369.84               | 94.3          | 5.7              |
|                             |              | #140               | 348.40                  | 347.17               | 91.2          | 8.8              |
|                             |              | #200               | 347.27                  | 346.51               | 89.3          | 10.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 89.3  
 Weight of hydrometer sample = 39.65  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 51.4          | 48.6             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 47.8          | 52.2             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 40.6          | 59.4             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 36.9          | 63.1             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 33.3          | 66.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 29.7          | 70.3             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 29.7          | 70.3             |

## Fractional Components

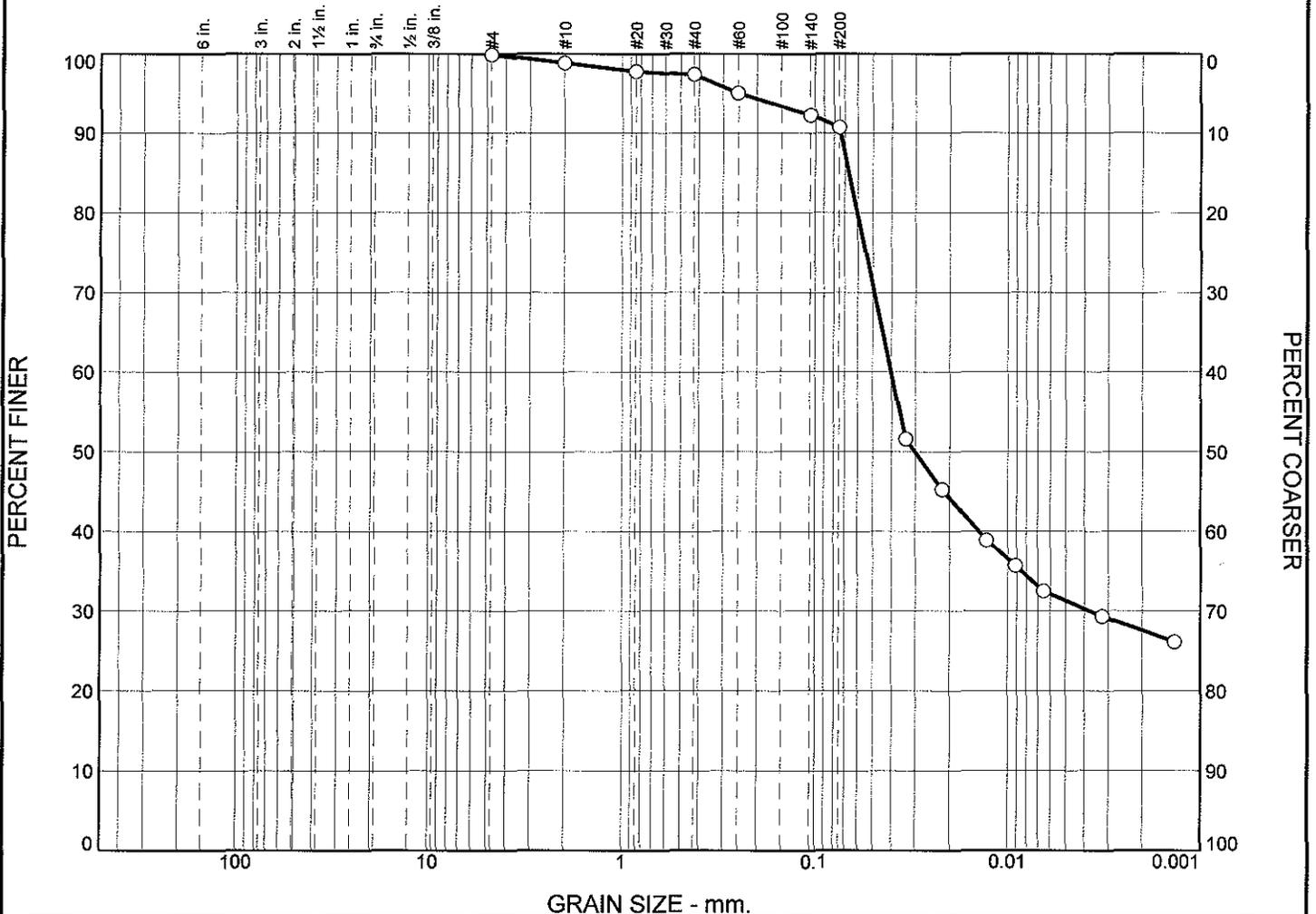
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 1.4     | 1.1  | 1.9  | 2.5  | 11.4    | 18.3  | 29.8 | 7.5  | 8.0  | 4.5     | 49.8  | 30.6 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0034          | 0.0289          | 0.0411          | 0.0620          | 0.0687          | 0.0850          | 0.3121          |

| Fineness Modulus |
|------------------|
| 0.20             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| 0          |           |           | 0.9        | 0.8     | 0.5  | 2.5  | 2.2  | 11.0    | 31.4   | 9.2  | 7.0  | 4.0     | 30.2   |

| LL | PL | D85    | D60    | D50    | D30    | D15 | D10 | Cc | Cu |
|----|----|--------|--------|--------|--------|-----|-----|----|----|
| 0  |    | 0.0667 | 0.0401 | 0.0302 | 0.0038 |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 503312    <b>Sample Number:</b> L0912912-14</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503312

Sample Number: L0912912-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.52  
 Tare Wt. = 4.55  
 Minus #200 from wash = 91.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.78                       | 0.00         | #4                 | 521.83                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.28                  | 484.81               | 98.8          | 1.2              |
|                             |              | #20                | 405.91                  | 405.42               | 97.8          | 2.2              |
|                             |              | #40                | 362.93                  | 362.74               | 97.4          | 2.6              |
|                             |              | #60                | 367.22                  | 366.16               | 95.0          | 5.0              |
|                             |              | #140               | 344.08                  | 342.82               | 92.3          | 7.7              |
|                             |              | #200               | 345.96                  | 345.25               | 90.7          | 9.3              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 90.7

Weight of hydrometer sample = 45.78

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0160         | 1.0162            | 0.0133 | 13.0 | 12.9       | 0.0338         | 51.6          | 48.4             |
| 5.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0218         | 45.2          | 54.8             |
| 15.00               | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0128         | 38.9          | 61.1             |
| 30.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0092         | 35.7          | 64.3             |
| 60.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0065         | 32.5          | 67.5             |
| 250.00              | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0032         | 29.3          | 70.7             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 26.1          | 73.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 0.8     | 0.5  | 2.5  | 2.2  | 11.0    | 17.0  | 31.4 | 9.2  | 7.0  | 4.0     | 51.6  | 30.2 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0038          | 0.0302          | 0.0401          | 0.0602          | 0.0667          | 0.0739          | 0.2468          |

| Fineness Modulus |
|------------------|
| 0.16             |

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## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503313

Sample Number: L0912912-15

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 19.91  
 Tare Wt. = 4.60  
 Minus #200 from wash = 71.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 53.97                       | 0.00         | #4                 | 521.71                  | 520.81               | 98.3          | 1.7              |
|                             |              | #10                | 483.38                  | 482.11               | 96.0          | 4.0              |
|                             |              | #20                | 413.95                  | 411.09               | 90.7          | 9.3              |
|                             |              | #40                | 380.10                  | 377.86               | 86.5          | 13.5             |
|                             |              | #60                | 372.80                  | 369.84               | 81.0          | 19.0             |
|                             |              | #140               | 350.89                  | 347.17               | 74.2          | 25.8             |
|                             |              | #200               | 347.79                  | 346.51               | 71.8          | 28.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 71.8

Weight of hydrometer sample = 53.97

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 32.5          | 67.5             |
| 5.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0218         | 30.4          | 69.6             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 23.9          | 76.1             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 21.8          | 78.2             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 19.7          | 80.3             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 17.5          | 82.5             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 17.5          | 82.5             |

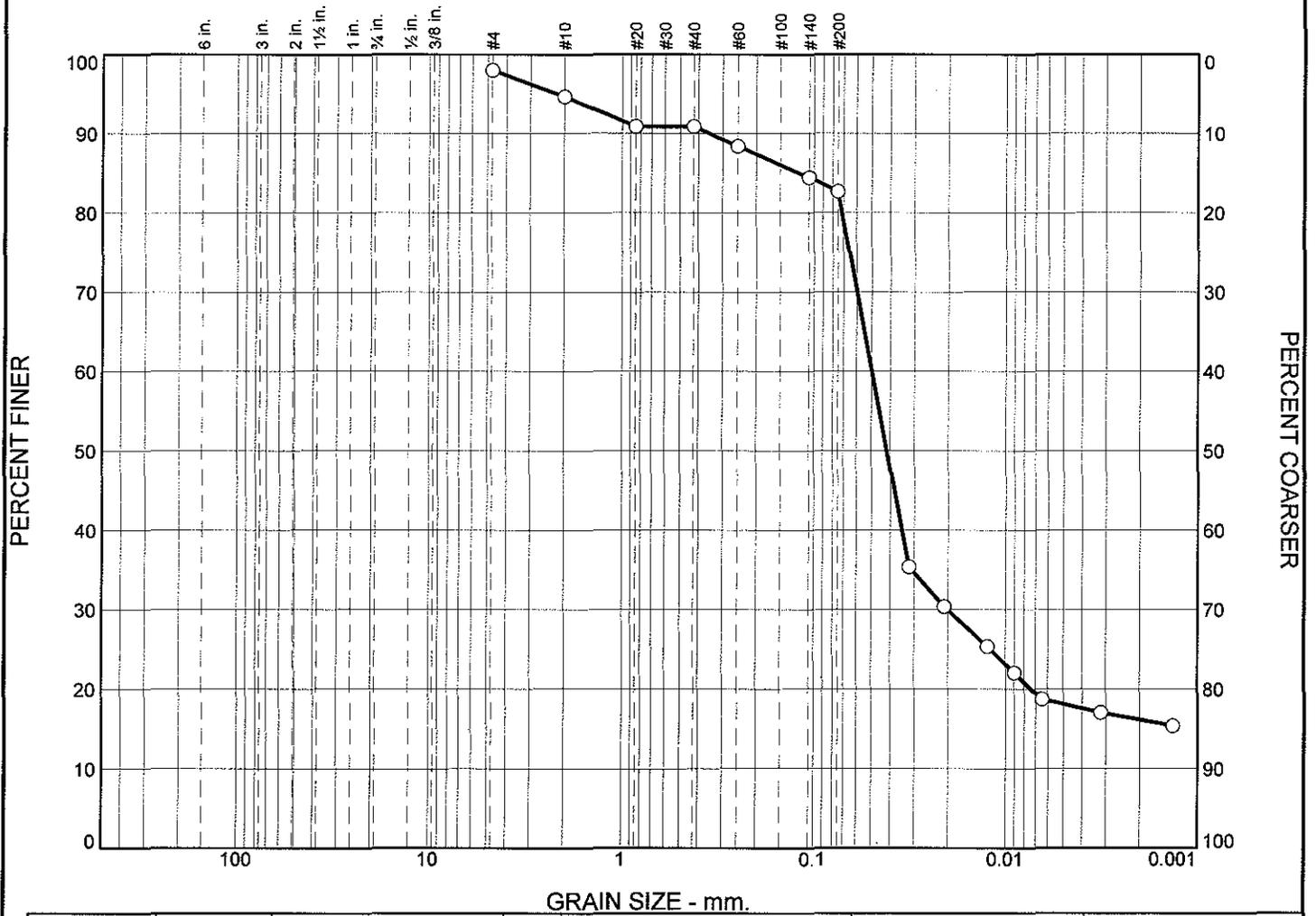
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.9      | 4.3     | 4.2  | 6.5  | 5.5  | 12.8    | 33.3  | 30.7 | 5.8  | 5.5  | 2.6     | 44.6  | 18.1 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0069          | 0.0212          | 0.0484          | 0.0592          | 0.2195          | 0.3665          | 0.7587          | 1.7075          |

| Fineness Modulus |
|------------------|
| 0.64             |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 2.6        | 3.1     | 0.7  | 2.5  | 3.2  | 12.6    | 37.6   | 7.5  | 6.9  | 3.1     | 17.5   |

| LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○  |    | 0.1192          | 0.0498          | 0.0416          | 0.0201          |                 |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503326    <b>Sample Number:</b> L0912912-16</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 503326

Sample Number: L0912912-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 20.33  
 Tare Wt. = 4.55  
 Minus #200 from wash = 80.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 79.61                       | 0.00         | #4                 | 523.37                  | 521.77               | 98.0          | 2.0              |
|                             |              | #10                | 487.46                  | 484.81               | 94.7          | 5.3              |
|                             |              | #20                | 408.43                  | 405.42               | 90.9          | 9.1              |
|                             |              | #40                | 362.75                  | 362.74               | 90.9          | 9.1              |
|                             |              | #60                | 368.14                  | 366.18               | 88.4          | 11.6             |
|                             |              | #140               | 345.96                  | 342.82               | 84.5          | 15.5             |
|                             |              | #200               | 346.67                  | 345.25               | 82.7          | 17.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 82.7  
 Weight of hydrometer sample = 79.61  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0210         | 1.0212            | 0.0133 | 18.0 | 11.5       | 0.0320         | 35.4          | 64.6             |
| 5.00                | 22.0            | 1.0180         | 1.0182            | 0.0133 | 15.0 | 12.3       | 0.0209         | 30.4          | 69.6             |
| 15.00               | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0125         | 25.4          | 74.6             |
| 30.00               | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0090         | 22.0          | 78.0             |
| 60.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0065         | 18.7          | 81.3             |
| 250.00              | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0032         | 17.0          | 83.0             |
| 1440.00             | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0013         | 15.4          | 84.6             |

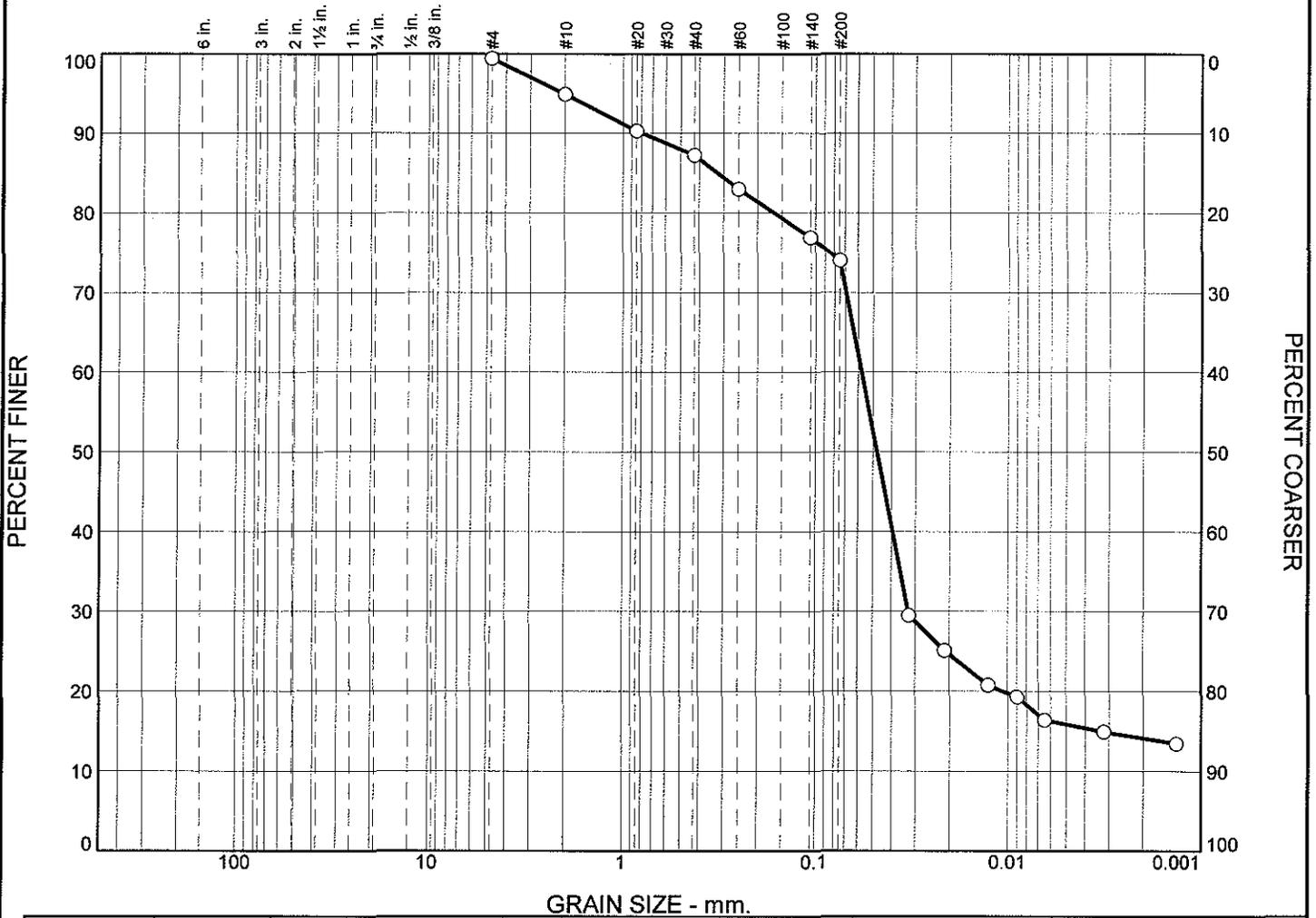
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.6      | 3.1     | 0.7  | 2.5  | 3.2  | 12.6    | 22.1  | 37.6 | 7.5  | 6.9  | 3.1     | 55.1  | 17.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0074          | 0.0201          | 0.0416          | 0.0498          | 0.0715          | 0.1192          | 0.3525          | 2.1839          |

| Fineness Modulus |
|------------------|
| 0.48             |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | Gravel          | Sand            |                 |                 |                 | Silt           |                |      |      | Clay |         |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|------|---------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |      | V. Fine |
| ○ |          |         |                 | 3.6             | 3.7             | 3.2             | 5.0             | 4.9             | 13.7           | 35.3           | 6.5  | 4.6  | 2.7  | 15.3    |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |      |         |
| ○ |          |         | 0.3208          | 0.0575          | 0.0476          | 0.0326          | 0.0033          |                 |                |                |      |      |      |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912912    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 508136    <b>Sample Number:</b> L0912912-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912912

Location: 508136

Sample Number: L0912912-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 25.75  
 Tare Wt. = 4.60  
 Minus #200 from wash = 74.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 81.46                       | 0.00         | #4                 | 521.30                  | 520.81               | 99.4          | 0.6              |
|                             |              | #10                | 485.77                  | 482.11               | 94.9          | 5.1              |
|                             |              | #20                | 414.84                  | 411.09               | 90.3          | 9.7              |
|                             |              | #40                | 380.34                  | 377.86               | 87.3          | 12.7             |
|                             |              | #60                | 373.31                  | 369.84               | 83.0          | 17.0             |
|                             |              | #140               | 352.12                  | 347.17               | 76.9          | 23.1             |
|                             |              | #200               | 348.50                  | 346.15               | 74.0          | 26.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 74.0

Weight of hydrometer sample = 81.46

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0200         | 1.0202            | 0.0133 | 17.0 | 11.8       | 0.0323         | 29.5          | 70.5             |
| 5.00                | 22.0            | 1.0170         | 1.0172            | 0.0133 | 14.0 | 12.6       | 0.0211         | 25.1          | 74.9             |
| 15.00               | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0126         | 20.7          | 79.3             |
| 30.00               | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0090         | 19.3          | 80.7             |
| 60.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0065         | 16.4          | 83.6             |
| 250.00              | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0032         | 14.9          | 85.1             |
| 1440.00             | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0013         | 13.4          | 86.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.6      | 3.7     | 3.2  | 5.0  | 4.9  | 13.7    | 30.5  | 35.3 | 6.5  | 4.6  | 2.7     | 49.1  | 15.3 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0033 | 0.0106 | 0.0326 | 0.0476 | 0.0575 | 0.1637 | 0.3208 | 0.7935 | 2.0367 |

| Fineness Modulus |
|------------------|
| 0.60             |

## Certificate/Approval Program Summary

Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

### **New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. **NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

*Air* (Organic Parameters: EPA TO-15)

**U.S. Army Corps of Engineers**

**Department of Defense** Certificate/Lab ID: L2217.01.

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

#### **Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

Station 207

# CHAIN OF CUSTODY

PAGE 3 of 4 41



Serial No. 08

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

**Client Information**  
 Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 Falmouth, MA 02536  
 Phone: 508-540-8080

**Project Information**  
 Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor  
 Project #: TO-0018  
 Project Manager: Lee Weishar  
 ALPHA Quote #:

**Turn-Around Time**  
 Standard     Rush (ONLY IF PRE-APPROVED)  
 Due Date:    Time:

Fax: 508-540-1001  
 Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha  
 Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: L0912912  
**Report Information**    **Data Deliverables**    **Billing Information**  
 FAX     EMAIL     Same as Client info    PO #:  
 ADEX     Add'l Deliverables

**Regulatory Requirements/Report Limits**  
 State/Fed Program:    Criteria:  
 fed

| ANALYSIS                    |        |            |         |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |                          |
|-----------------------------|--------|------------|---------|----|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|--------------------------|
| total PCB congeners NOAA 18 | TOC    | grain size | archive |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |  |                 | Sample Specific Comments |
| 1                           | 503011 | 9/27/09    | 13:25   | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
| 2                           | 503012 | 9/27/09    | 13:30   | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
| 3                           | 503013 | 9/27/09    | 13:33   | SE | HC | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
|                             | 503025 | 9/27/09    | 13:42   | SE | DB | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed chem        | 1                        |
| 4                           | 503026 | 9/27/09    | 13:42   | SE | DB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed gs          | 1                        |
|                             | 503027 | 9/27/09    | 13:42   | SE | DB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>   | sed arch        | 1                        |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
|                                | 503011    | 9/27/09    | 13:25 | SE            | HC                 |
|                                | 503012    | 9/27/09    | 13:30 | SE            | HC                 |
|                                | 503013    | 9/27/09    | 13:33 | SE            | HC                 |
|                                | 503025    | 9/27/09    | 13:42 | SE            | DB                 |
|                                | 503026    | 9/27/09    | 13:42 | SE            | DB                 |
|                                | 503027    | 9/27/09    | 13:42 | SE            | DB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>[Signature]</i> | 9/27/09 16:10 | <i>[Signature]</i> | 9/27/09       |
| <i>[Signature]</i> | 9/28/09 09:15 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 11:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 208

# CHAIN OF CUSTODY

PAGE 18 OF 41



Serial No: 08

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 40912912

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18 | TOC                                 | grain size                          | archive                             |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-----------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 5                              | 503111    | 9/26/09    | 15:20 | SE            | HJC                |
| 6                              | 503112    | 9/26/09    | 15:20 | SE            | HJC                |
| 7                              | 503113    | 9/26/09    | 15:20 | SE            | HJC                |
|                                | 503125    | 9/26/09    | 15:40 | SE            | HJC                |
| 8                              | 503126    | 9/26/09    | 15:40 | SE            | HJC                |
|                                | 503127    | 9/26/09    | 15:40 | SE            | HJC                |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:             | Date/Time     | Received By:                 | Date/Time     |
|------------------------------|---------------|------------------------------|---------------|
| <i>Handwritten Signature</i> | 9/26/09 19:12 | <i>Handwritten Signature</i> | 9-26-09 19:17 |
| <i>Handwritten Signature</i> | 9-28-09 09:13 | <i>Handwritten Signature</i> | 9/29/09 9:25  |
| <i>Handwritten Signature</i> | 9/28/09 10:20 | <i>Handwritten Signature</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 411

# CHAIN OF CUSTODY

PAGE 37 OF 41



Serial No. 081618

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 20912912

## Report Information Data Deliverables Billing Information

FAX     EMAIL     Same as Client info    PO #:  
 ADEX     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program: fed    Criteria:

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
**Filtration**  
 Done  
 Not Needed  
 Lab to do  
**Preservation**  
 Lab to do  
 (Please specify below)

**TOTAL # BOTTLES**

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 9  | 503211 | 9-27-09 | 13:42 | SE | JB |
| 10 | 503212 | 9-27-09 | 14:05 | SE | JB |
| 11 | 503213 | 9-27-09 | 14:12 | SE | JB |
|    | 503225 | 9-27-09 | 13:50 | SE | JB |
| 12 | 503226 | 9-27-09 | 13:50 | SE | JB |
|    | 503227 | 9-27-09 | 13:50 | SE | JB |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

| Relinquished By: | Date/Time     | Received By: | Date/Time     |
|------------------|---------------|--------------|---------------|
| James Bajich     | 9/27/09 1605  | Debra Karp   | 9-27-09       |
| P. Dilbert       | 9-28-09 09:13 | P. Dilbert   | 9/28/09 9:25  |
|                  | 9/28/09 10:20 |              | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 212

# CHAIN OF CUSTODY

PAGE 19 OF 41



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 10912912

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 13                             | 503311    | 9/26/09    | 13:55 | SE            | HC                 |
| 14                             | 503312    | 9/26/09    | 13:55 | SE            | HC                 |
| 15                             | 503313    | 9/26/09    | 13:55 | SE            | HC                 |
|                                | 503325    | 9/26/09    | 14:02 | SE            | HC                 |
| 16                             | 503326    | 9/26/09    | 14:02 | SE            | HC                 |
|                                | 503327    | 9/26/09    | 14:02 | SE            | HC                 |
|                                | 508135    | 9/26/09    | 14:15 | SE            | HC                 |
| 17                             | 508136    | 9/26/09    | 14:15 | SE            | HC                 |

Container Type

G G G G - - - - -

Preservative

A A A A - - - - -

Relinquished By:

Date/Time

Received By:

Date/Time

Handwritten signatures and dates for Relinquished By, Received By, and Date/Time.

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912913  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Phone:          | (508) 540-8080  |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 08/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912913-01                | 503411           | NEW BEDFORD, MA            | 09/27/09 12:19                  |
| L0912913-02                | 503412           | NEW BEDFORD, MA            | 09/27/09 12:34                  |
| L0912913-03                | 503413           | NEW BEDFORD, MA            | 09/27/09 13:00                  |
| L0912913-04                | 503426           | NEW BEDFORD, MA            | 09/27/09 12:28                  |
| L0912913-05                | 503511           | NEW BEDFORD, MA            | 09/26/09 12:35                  |
| L0912913-06                | 503512           | NEW BEDFORD, MA            | 09/26/09 12:35                  |
| L0912913-07                | 503513           | NEW BEDFORD, MA            | 09/26/09 12:35                  |
| L0912913-08                | 503526           | NEW BEDFORD, MA            | 09/26/09 12:57                  |
| L0912913-09                | 503611           | NEW BEDFORD, MA            | 09/26/09 11:35                  |
| L0912913-10                | 503612           | NEW BEDFORD, MA            | 09/26/09 11:35                  |
| L0912913-11                | 503613           | NEW BEDFORD, MA            | 09/26/09 11:35                  |
| L0912913-12                | 503626           | NEW BEDFORD, MA            | 09/26/09 11:15                  |
| L0912913-13                | 503711           | NEW BEDFORD, MA            | 09/27/09 11:07                  |
| L0912913-14                | 503712           | NEW BEDFORD, MA            | 09/27/09 11:24                  |
| L0912913-15                | 503713           | NEW BEDFORD, MA            | 09/27/09 11:41                  |
| L0912913-16                | 503726           | NEW BEDFORD, MA            | 09/27/09 11:11                  |
| L0912913-17                | 503811           | NEW BEDFORD, MA            | 09/26/09 09:00                  |
| L0912913-18                | 503812           | NEW BEDFORD, MA            | 09/26/09 09:00                  |
| L0912913-19                | 503813           | NEW BEDFORD, MA            | 09/26/09 09:00                  |
| L0912913-20                | 503826           | NEW BEDFORD, MA            | 09/26/09 09:26                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

---

### Report Submission

This report replaces the original report issued on February 3, 2010. The report was ammended to include revised Grain Size data.

The WG383163-1 Laboratory Duplicate RPD is outside the acceptance criteria for sieve gravel (29%), % very coarse sand (29%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Peter Henriksen

Title: Technical Director/Representative

Date: 08/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-01  
**Client ID:** 503411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 12:19  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 20.9   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 24.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.3   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.30   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-02  
**Client ID:** 503412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 12:34  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.80   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 24.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.9   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.4   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-03  
**Client ID:** 503413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 13:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.80   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 33.5   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 29.7   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.2   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912913-04  
**Client ID:** 503426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 12:28  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.600  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 23.4   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 24.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 25.4   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-05  
**Client ID:** 503511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 52.1   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 34.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-06  
**Client ID:** 503512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 34.3   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-07  
**Client ID:** 503513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 7.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.2   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 38.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-08  
**Client ID:** 503526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:57  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.30   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.600  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.700  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 60.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-09  
**Client ID:** 503611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 11:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 11.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 28.5   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 2.30   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-10  
**Client ID:** 503612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 11:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 8.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.80   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 30.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 4.60   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 3.10   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912913-11  
**Client ID:** 503613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 11:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 9.50   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.60   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 35.1   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.10   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-12  
**Client ID:** 503626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 11:15  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.30   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 38.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 3.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.200  |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-13  
**Client ID:** 503711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:07  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.60   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.30   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 25.5   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.5   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.4   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912913-14  
**Client ID:** 503712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:24  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.3   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.3   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.7   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 19.9   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-15  
**Client ID:** 503713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:41  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.90   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.4   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 33.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 18.7   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.60   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-16  
**Client ID:** 503726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 11:11  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.5   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 21.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.7   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.1   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.00   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-17  
**Client ID:** 503811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 09:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.80   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.80   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.30   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 14.3   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.4   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.1   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.80   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-18  
**Client ID:** 503812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 09:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.10   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 22.8   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.3   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912913-19  
**Client ID:** 503813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 09:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.30   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.40   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.6   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.1   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 14.1   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912913-20  
**Client ID:** 503826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 09:26  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.50   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.50   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.0   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.7   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.2   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 20.3   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/06/09 00:00 | 12,D422(M)        | SE      |

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912913

**Report Date:** 08/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG383163-1 QC Sample: L0912913-04 Client ID: 503426 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 0.3           | 0.400            | %     | 29  | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 0.6           | 0.800            | %     | 29  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 5.0           | 5.60             | %     | 11  |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 23.4          | 23.3             | %     | 0   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 24.8          | 23.5             | %     | 5   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 16.6          | 16.0             | %     | 4   |      | 20         |
| Silt - (1.95-62.5 um)  | 25.4          | 23.9             | %     | 6   |      | 20         |
| Clay - (<1.95 um)  | 3.7           | 3.30             | %     | 11  |      | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912913

Project Number: TO-0018

Report Date: 08/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

## Cooler Information Custody Seal

## Cooler

B Absent

F Absent

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-01A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-02A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-03A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-04A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-05A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-06A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-07A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912913

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-08A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-09A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-10A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-11A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-12A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-13A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-14A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-15A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-16A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-17A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-18A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912913-19A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912913

Report Date: 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912913-20A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NI** - Not Ignitable.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

*Data Qualifiers*

**RE** - Analytical results are from sample re-extraction.

**J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

**ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912913  
**Report Date:** 08/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

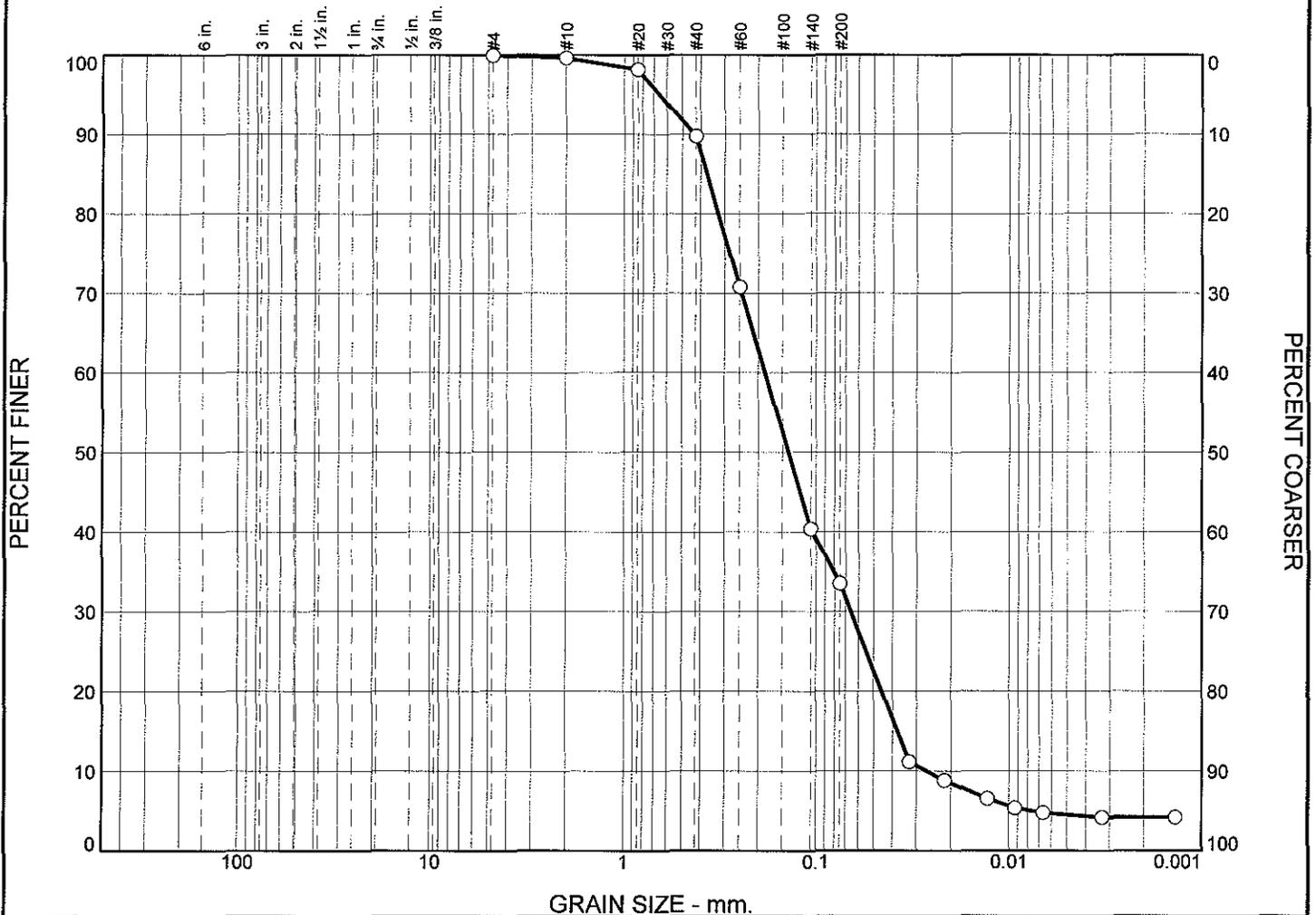
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# ASTM D422-63

## Wet Sieve Hydrometer

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      | % Clay |         |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|--------|---------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine |        | V. Fine |
| ○          |           |           | 0.3        | 1.2     | 6.7  | 20.9 | 24.6 | 17.6    | 17.8   | 3.4  | 2.4  | 0.7    | 4.3     |

| X | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|---|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○ |    |    | 0.3719 | 0.1844 | 0.1391 | 0.0658 | 0.0377 | 0.0266 | 0.88 | 6.92 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503411    <b>Sample Number:</b> L0912913-01</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912913  
 Location: 503411  
 Sample Number: L0912913-01  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 67.42  
 Tare Wt. = 4.57  
 Minus #200 from wash = 32.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 92.85                       | 0.00         | #4                 | 520.85                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.47                  | 482.11               | 99.6          | 0.4              |
|                             |              | #20                | 412.38                  | 411.09               | 98.2          | 1.8              |
|                             |              | #40                | 385.67                  | 377.86               | 89.8          | 10.2             |
|                             |              | #60                | 387.46                  | 369.84               | 70.8          | 29.2             |
|                             |              | #140               | 375.41                  | 347.17               | 40.4          | 59.6             |
|                             |              | #200               | 352.86                  | 346.51               | 33.5          | 66.5             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 33.5  
 Weight of hydrometer sample = 92.85  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0190         | 1.0192            | 0.0133 | 16.0 | 12.1       | 0.0327         | 11.1          | 88.9             |
| 5.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0216         | 8.8           | 91.2             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 6.5           | 93.5             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 5.3           | 94.7             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 4.8           | 95.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 4.2           | 95.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 4.2           | 95.8             |

**Fractional Components**

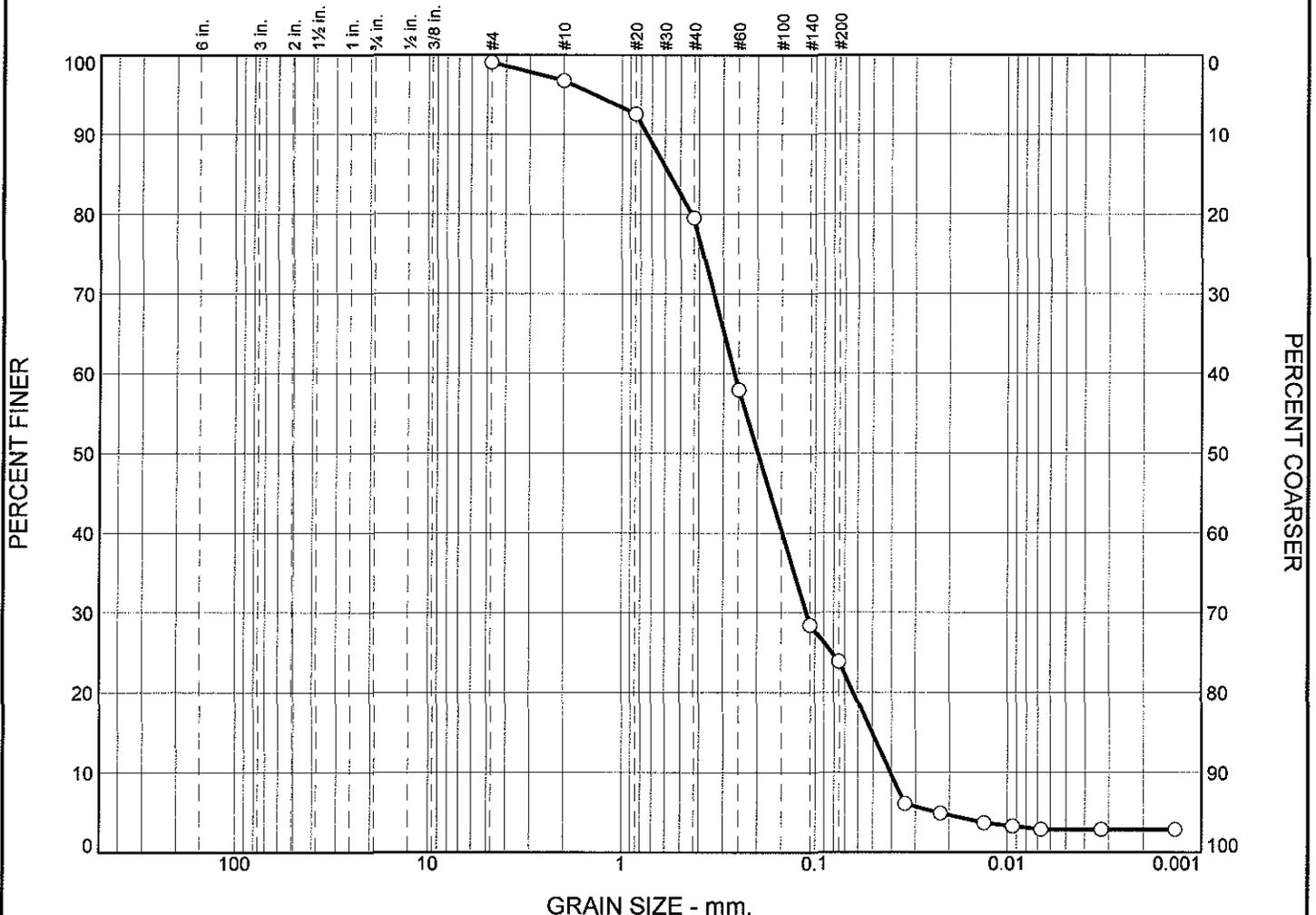
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 1.2     | 6.7  | 20.9 | 24.6 | 17.6    | 71.0  | 17.8 | 3.4  | 2.4  | 0.7     | 24.3  | 4.3  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0266 | 0.0377 | 0.0454 | 0.0658 | 0.1391 | 0.1844 | 0.3234 | 0.3719 | 0.4332 | 0.6541 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.78             | 6.92           | 0.88           |

Alpha Analytical

# Particle Size Distribution Report



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503412

Sample Number: L0912913-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 80.60  
 Tare Wt. = 4.63  
 Minus #200 from wash = 20.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 96.09                       | 0.00         | #4                 | 522.67                  | 521.77               | 99.1          | 0.9              |
|                             |              | #10                | 487.02                  | 484.81               | 96.8          | 3.2              |
|                             |              | #20                | 409.42                  | 405.42               | 92.6          | 7.4              |
|                             |              | #40                | 375.32                  | 362.74               | 79.5          | 20.5             |
|                             |              | #60                | 386.85                  | 366.14               | 58.0          | 42.0             |
|                             |              | #140               | 371.16                  | 342.82               | 28.5          | 71.5             |
|                             |              | #200               | 349.67                  | 345.25               | 23.9          | 76.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 23.9

Weight of hydrometer sample = 96.09

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 6.1           | 93.9             |
| 5.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0  | 13.9       | 0.0222         | 4.9           | 95.1             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 3.7           | 96.3             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 3.3           | 96.7             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0067         | 2.9           | 97.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 2.9           | 97.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 2.9           | 97.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.8      | 3.4     | 10.8 | 24.6 | 23.9 | 14.4    | 77.1  | 13.9 | 1.7  | 1.0  | 0.2     | 16.8  | 2.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0406          | 0.0506          | 0.0632          | 0.1108          | 0.1983          | 0.2629          | 0.4362          | 0.5684          | 0.7407          | 1.3919          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.18             | 6.48           | 1.15           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503413

Sample Number: L0912913-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 97.72  
 Tare Wt. = 4.58  
 Minus #200 from wash = 12.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 106.42                      | 0.00         | #4                 | 520.83                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.20                  | 482.11               | 99.9          | 0.1              |
|                             |              | #20                | 412.10                  | 411.09               | 98.9          | 1.1              |
|                             |              | #40                | 391.27                  | 377.86               | 86.3          | 13.7             |
|                             |              | #60                | 402.31                  | 369.84               | 55.8          | 44.2             |
|                             |              | #140               | 386.38                  | 347.17               | 19.0          | 81.0             |
|                             |              | #200               | 352.22                  | 346.51               | 13.6          | 86.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 13.6

Weight of hydrometer sample = 106.42

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 2.3           | 97.7             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 1.9           | 98.1             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.7           | 98.3             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.7           | 98.3             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.5           | 98.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.5           | 98.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.5           | 98.5             |

## Fractional Components

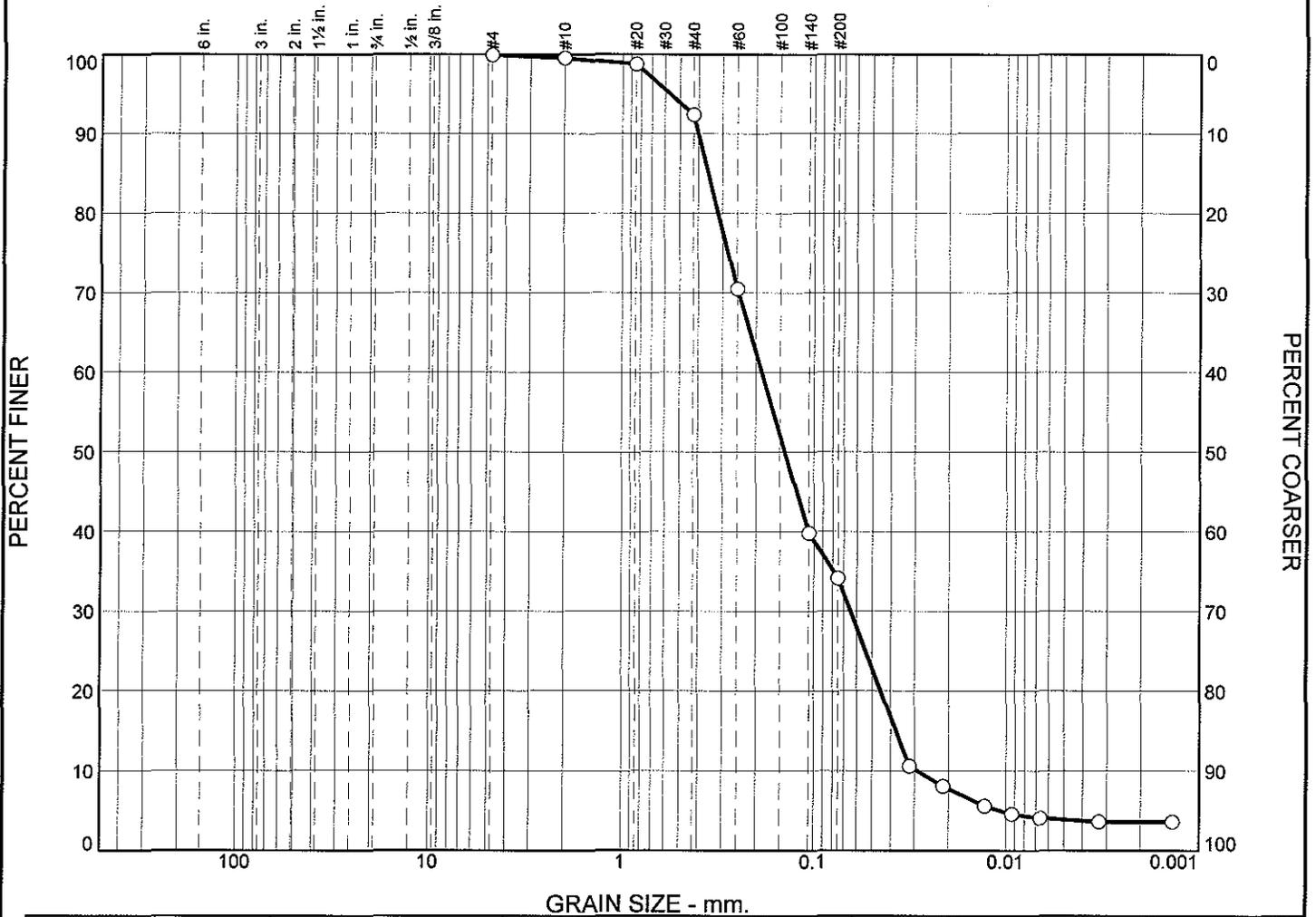
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.8     | 9.8  | 33.5 | 29.7 | 15.2    | 89.0  | 8.7  | 0.5  | 0.1  | 0.1     | 9.4   | 1.5  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0590 | 0.0820 | 0.1085 | 0.1370 | 0.2182 | 0.2688 | 0.3806 | 0.4152 | 0.5196 | 0.6841 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.08             | 4.56           | 1.18           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | Granules        | Sand            |                 |                 |                 |                | Silt           |      |      |         | Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |      |
| ○ |          |         |                 | 0.3             | 0.6             | 5.0             | 23.4            | 24.8            | 16.6           | 18.7           | 3.9  | 2.2  | 0.6     | 3.7  |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |      |
| ○ |          |         | 0.3552          | 0.1864          | 0.1409          | 0.0646          | 0.0375          | 0.0292          | 0.77           | 6.38           |      |      |         |      |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503426    <b>Sample Number:</b> L0912913-04</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503426

Sample Number: L0912913-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 78.59  
 Tare Wt. = 4.61  
 Minus #200 from wash = 32.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 110.23                      | 0.00         | #4                 | 521.86                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.23                  | 484.81               | 99.5          | 0.5              |
|                             |              | #20                | 406.28                  | 405.42               | 98.8          | 1.2              |
|                             |              | #40                | 369.73                  | 362.74               | 92.4          | 7.6              |
|                             |              | #60                | 390.32                  | 366.16               | 70.5          | 29.5             |
|                             |              | #140               | 376.63                  | 342.82               | 39.8          | 60.2             |
|                             |              | #200               | 351.51                  | 345.25               | 34.1          | 65.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 34.1

Weight of hydrometer sample = 110.23

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0210         | 1.0212            | 0.0133 | 18.0 | 11.5       | 0.0320         | 10.6          | 89.4             |
| 5.00                | 22.0            | 1.0160         | 1.0162            | 0.0133 | 13.0 | 12.9       | 0.0213         | 8.1           | 91.9             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 5.6           | 94.4             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 4.6           | 95.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 4.1           | 95.9             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 3.6           | 96.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 3.6           | 96.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.6     | 5.0  | 23.4 | 24.8 | 16.6    | 70.4  | 18.7 | 3.9  | 2.2  | 0.6     | 25.4  | 3.7  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0292          | 0.0375          | 0.0450          | 0.0646          | 0.1409          | 0.1864          | 0.3147          | 0.3552          | 0.4009          | 0.5637          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.76             | 6.38           | 0.77           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503426

Sample Number: WG383163-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 84.35  
 Tare Wt. = 4.47  
 Minus #200 from wash = 31.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 116.22                      | 0.00         | #4                 | 524.45                  | 520.81               | 96.9          | 3.1              |
|                             |              | #10                | 482.70                  | 482.11               | 96.4          | 3.6              |
|                             |              | #20                | 412.23                  | 411.09               | 95.4          | 4.6              |
|                             |              | #40                | 386.08                  | 377.86               | 88.3          | 11.7             |
|                             |              | #60                | 394.94                  | 369.84               | 66.7          | 33.3             |
|                             |              | #140               | 381.03                  | 347.17               | 37.6          | 62.4             |
|                             |              | #200               | 352.88                  | 346.51               | 32.1          | 67.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 32.1

Weight of hydrometer sample = 116.22

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 15 IH

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0210         | 1.0212            | 0.0133 | 18.0 | 11.5       | 0.0320         | 9.4           | 90.6             |
| 5.00                | 22.0            | 1.0160         | 1.0162            | 0.0133 | 13.0 | 12.9       | 0.0213         | 7.2           | 92.8             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 5.0           | 95.0             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 4.1           | 95.9             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 3.6           | 96.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 3.2           | 96.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 3.2           | 96.8             |

## Fractional Components

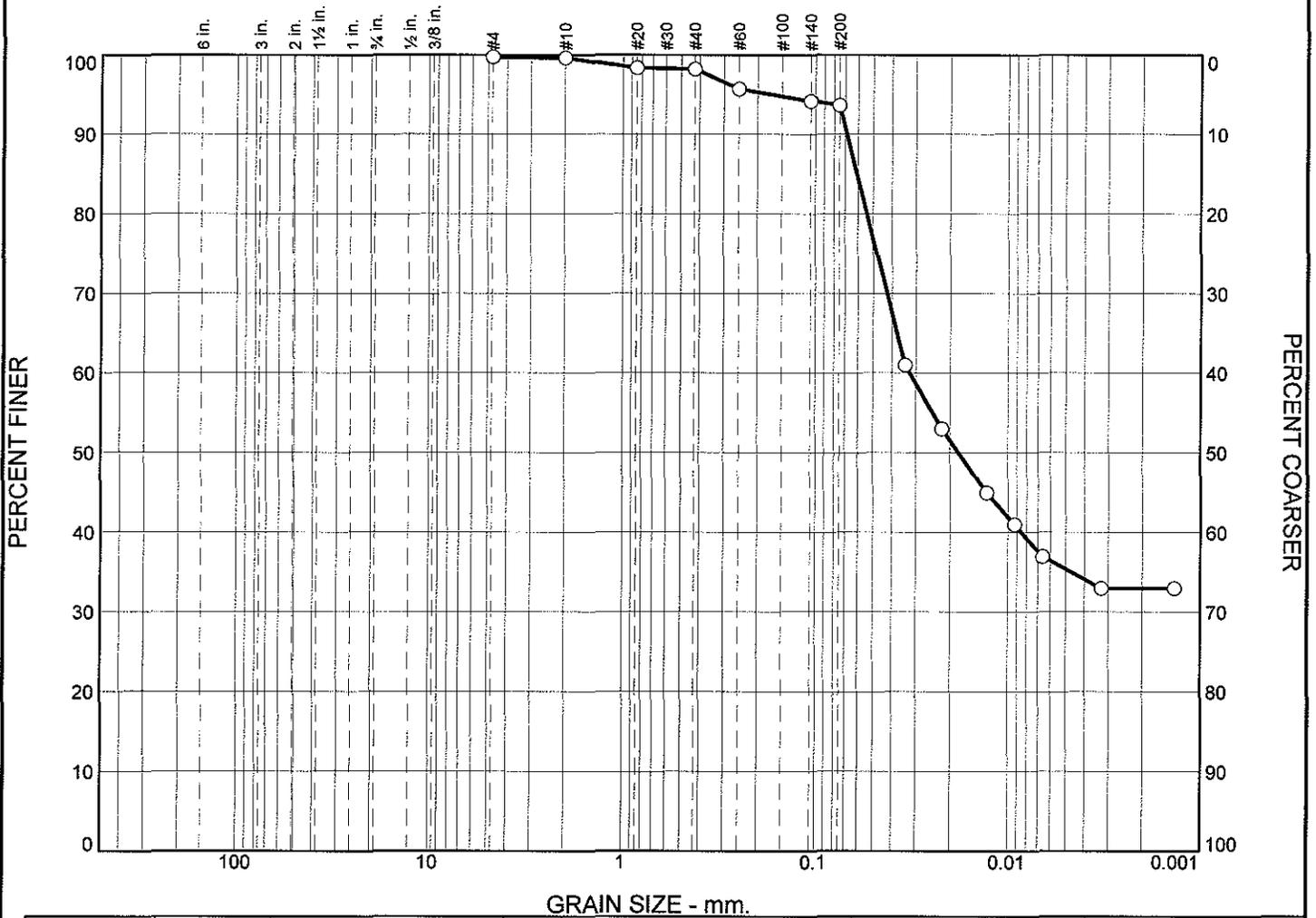
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 0.8     | 5.6  | 23.3 | 23.5 | 16.0    | 69.2  | 18.0 | 3.4  | 1.9  | 0.6     | 23.9  | 3.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0327          | 0.0394          | 0.0476          | 0.0693          | 0.1528          | 0.2052          | 0.3465          | 0.3918          | 0.5017          | 0.8190          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.96             | 6.28           | 0.72           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 0.1        | 1.0     | 0.4  | 2.5  | 1.2  | 8.4     | 26.8   | 11.5 | 8.9  | 4.9     | 34.0   |

| X | LL | PL | D85    | D60    | D50    | D30 | D15 | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|-----|-----|-----|----|----|
| ○ |    |    | 0.0609 | 0.0323 | 0.0181 |     |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503511    <b>Sample Number:</b> L0912913-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912913  
 Location: 503511  
 Sample Number: L0912913-05  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 6.39  
 Tare Wt. = 4.50  
 Minus #200 from wash = 95.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 37.51                       | 0.00         | #4                 | 521.87                  | 521.77               | 99.7          | 0.3              |
|                             |              | #10                | 484.85                  | 484.81               | 99.6          | 0.4              |
|                             |              | #20                | 405.90                  | 405.42               | 98.3          | 1.7              |
|                             |              | #40                | 362.79                  | 362.74               | 98.2          | 1.8              |
|                             |              | #60                | 367.10                  | 366.16               | 95.7          | 4.3              |
|                             |              | #140               | 343.39                  | 342.82               | 94.2          | 5.8              |
|                             |              | #200               | 345.45                  | 345.25               | 93.7          | 6.3              |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 93.7  
 Weight of hydrometer sample = 37.51  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0341         | 61.0          | 39.0             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 53.0          | 47.0             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 45.0          | 55.0             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 41.0          | 59.0             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 36.9          | 63.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 32.9          | 67.1             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 32.9          | 67.1             |

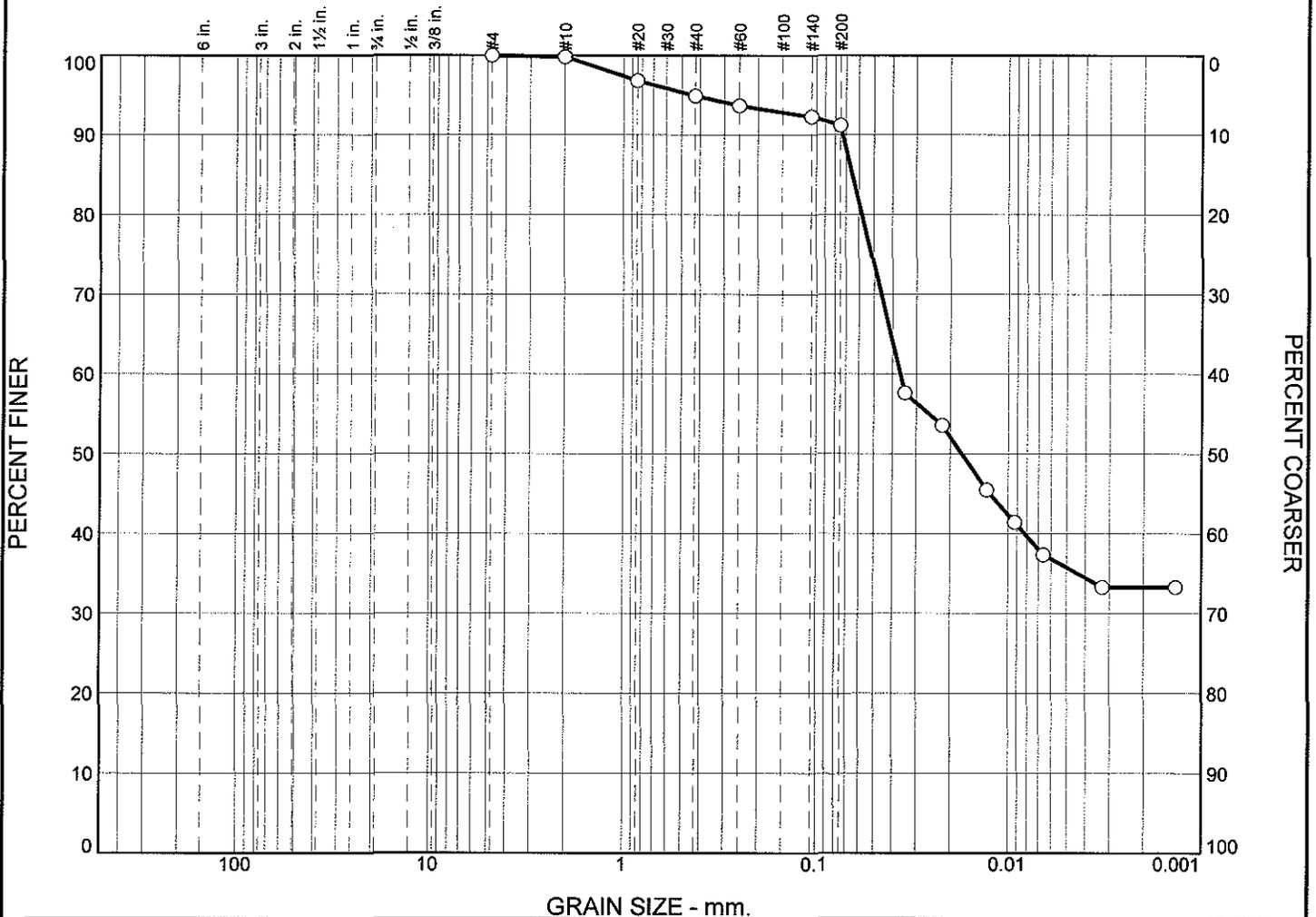
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 1.0     | 0.4  | 2.5  | 1.2  | 8.4     | 13.5  | 26.8 | 11.5 | 8.9  | 4.9     | 52.1  | 34.0 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0181 | 0.0323 | 0.0539 | 0.0609 | 0.0687 | 0.1676 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.12                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 0.1        | 2.4     | 2.0  | 1.7  | 1.2  | 9.2     | 26.6   | 8.4  | 8.9  | 5.1     | 34.3   |

| X | LL | PL | D85    | D60    | D50    | D30 | D15 | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|-----|-----|-----|----|----|
| ○ |    |    | 0.0650 | 0.0364 | 0.0174 |     |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912913     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
**Source of Sample:** 503512     **Sample Number:** L0912913-06  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912913  
**Location:** 503512  
**Sample Number:** L0912913-06  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 7.13  
 Tare Wt. = 4.51  
 Minus #200 from wash = 92.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 36.13                       | 0.00         | #4                 | 520.82                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.17                  | 482.11               | 99.8          | 0.2              |
|                             |              | #20                | 412.17                  | 411.09               | 96.8          | 3.2              |
|                             |              | #40                | 378.55                  | 377.86               | 94.9          | 5.1              |
|                             |              | #60                | 370.28                  | 369.84               | 93.7          | 6.3              |
|                             |              | #140               | 347.68                  | 347.17               | 92.3          | 7.7              |
|                             |              | #200               | 346.90                  | 346.51               | 91.2          | 8.8              |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 91.2  
 Weight of hydrometer sample = 36.13  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 57.6          | 42.4             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 53.6          | 46.4             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 45.5          | 54.5             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 41.4          | 58.6             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 37.3          | 62.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 33.3          | 66.7             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 33.3          | 66.7             |

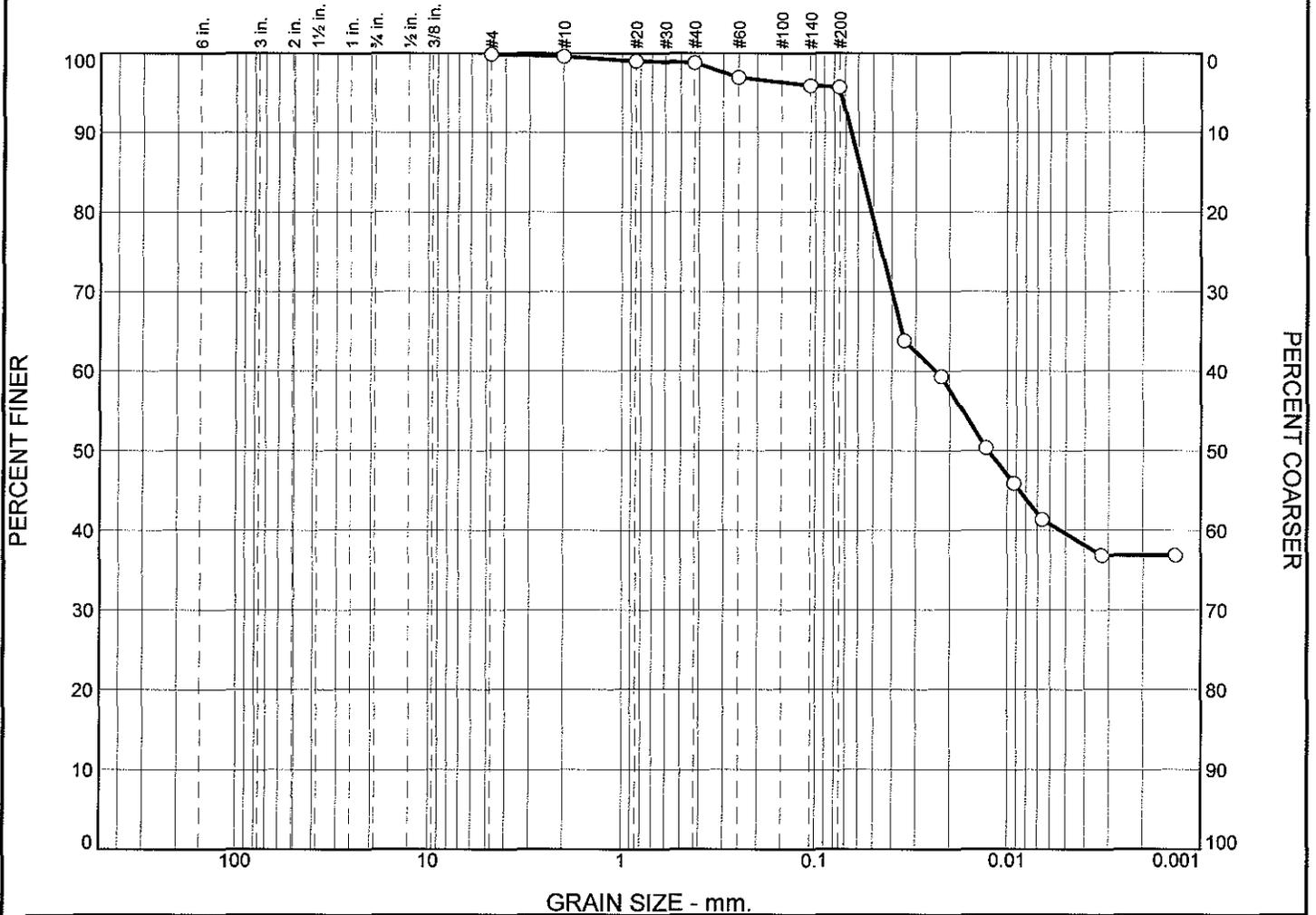
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.1      | 2.4     | 2.0  | 1.7  | 1.2  | 9.2     | 16.5  | 26.6 | 8.4  | 8.9  | 5.1     | 49.0 | 34.3  |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0174 | 0.0364 | 0.0579 | 0.0650 | 0.0729 | 0.4395 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.19                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| 0          |           |           | 0.2        | 0.5     | 0.2  | 2.0  | 0.8  | 7.9     | 25.4   | 9.3  | 9.9  | 5.6     | 38.0   |

| LL | PL | D85    | D60    | D50    | D30 | D15 | D10 | Cc | Cu |
|----|----|--------|--------|--------|-----|-----|-----|----|----|
| 0  |    | 0.0578 | 0.0235 | 0.0126 |     |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

Project No. L0912913 Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring

Source of Sample: 503513 Sample Number: L0912913-07

**Alpha Analytical**  
**Mansfield, MA**

Remarks:

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503513

Sample Number: L0912913-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 5.69  
 Tare Wt. = 4.55  
 Minus #200 from wash = 96.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 34.23                       | 0.00         | #4                 | 521.81                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 484.91                  | 484.81               | 99.6          | 0.4              |
|                             |              | #20                | 405.62                  | 405.42               | 99.0          | 1.0              |
|                             |              | #40                | 362.81                  | 362.74               | 98.8          | 1.2              |
|                             |              | #60                | 366.80                  | 366.16               | 96.9          | 3.1              |
|                             |              | #140               | 343.16                  | 342.82               | 95.9          | 4.1              |
|                             |              | #200               | 345.33                  | 345.25               | 95.7          | 4.3              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 95.7

Weight of hydrometer sample = 34.23

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 63.8          | 36.2             |
| 5.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0220         | 59.3          | 40.7             |
| 15.00               | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0129         | 50.3          | 49.7             |
| 30.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0092         | 45.9          | 54.1             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 41.4          | 58.6             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 36.9          | 63.1             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0014         | 36.9          | 63.1             |

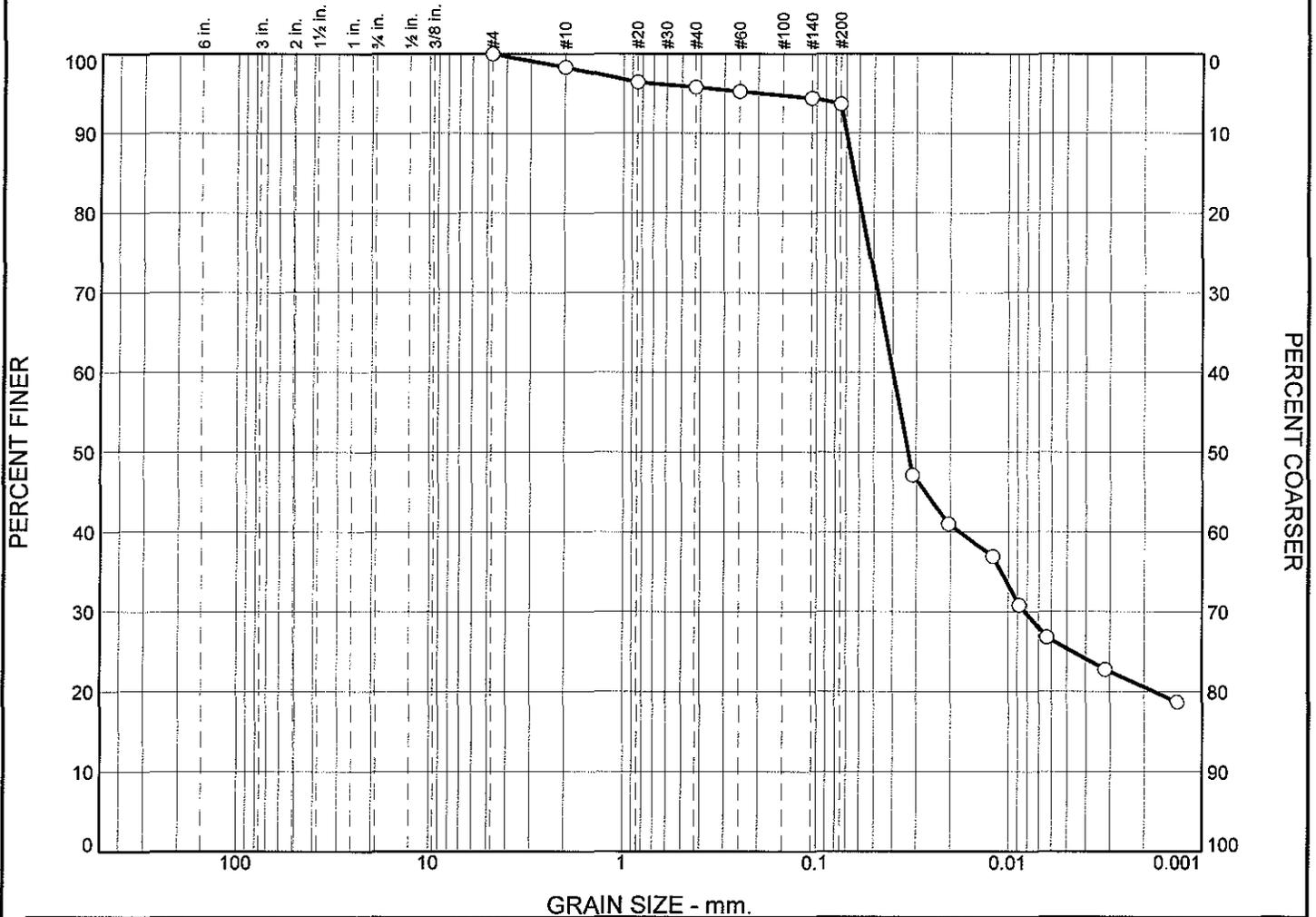
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 0.5     | 0.2  | 2.0  | 0.8  | 7.9     | 11.4  | 25.4 | 9.3  | 9.9  | 5.6     | 50.2  | 38.0 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0126 | 0.0235 | 0.0511 | 0.0578 | 0.0653 | 0.0737 |

| Fineness Modulus |
|------------------|
| 0.08             |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 1.3             | 1.5             | 0.9             | 0.6             | 0.7             | 10.6           | 37.0           | 8.1  | 9.5  | 5.4     | 24.0   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0637          | 0.0398          | 0.0330          | 0.0082          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503526    <b>Sample Number:</b> L0912913-08</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503526

Sample Number: L0912913-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.98  
 Tare Wt. = 4.56  
 Minus #200 from wash = 94.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 74.17                       | 0.00         | #4                 | 520.83                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 483.34                  | 482.11               | 98.3          | 1.7              |
|                             |              | #20                | 412.50                  | 411.09               | 96.4          | 3.6              |
|                             |              | #40                | 378.31                  | 377.86               | 95.8          | 4.2              |
|                             |              | #60                | 370.24                  | 369.84               | 95.3          | 4.7              |
|                             |              | #140               | 347.79                  | 347.17               | 94.4          | 5.6              |
|                             |              | #200               | 347.06                  | 346.51               | 93.7          | 6.3              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 93.7

Weight of hydrometer sample = 74.17

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0230         | 1.0232            | 0.0133 | 20.0 | 11.0       | 0.0312         | 47.1          | 52.9             |
| 5.00                | 22.0            | 1.0200         | 1.0202            | 0.0133 | 17.0 | 11.8       | 0.0205         | 41.0          | 59.0             |
| 15.00               | 22.0            | 1.0180         | 1.0182            | 0.0133 | 15.0 | 12.3       | 0.0121         | 36.9          | 63.1             |
| 30.00               | 22.0            | 1.0150         | 1.0152            | 0.0133 | 12.0 | 13.1       | 0.0088         | 30.9          | 69.1             |
| 60.00               | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0064         | 26.8          | 73.2             |
| 250.00              | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0032         | 22.7          | 77.3             |
| 1440.00             | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0013         | 18.7          | 81.3             |

## Fractional Components

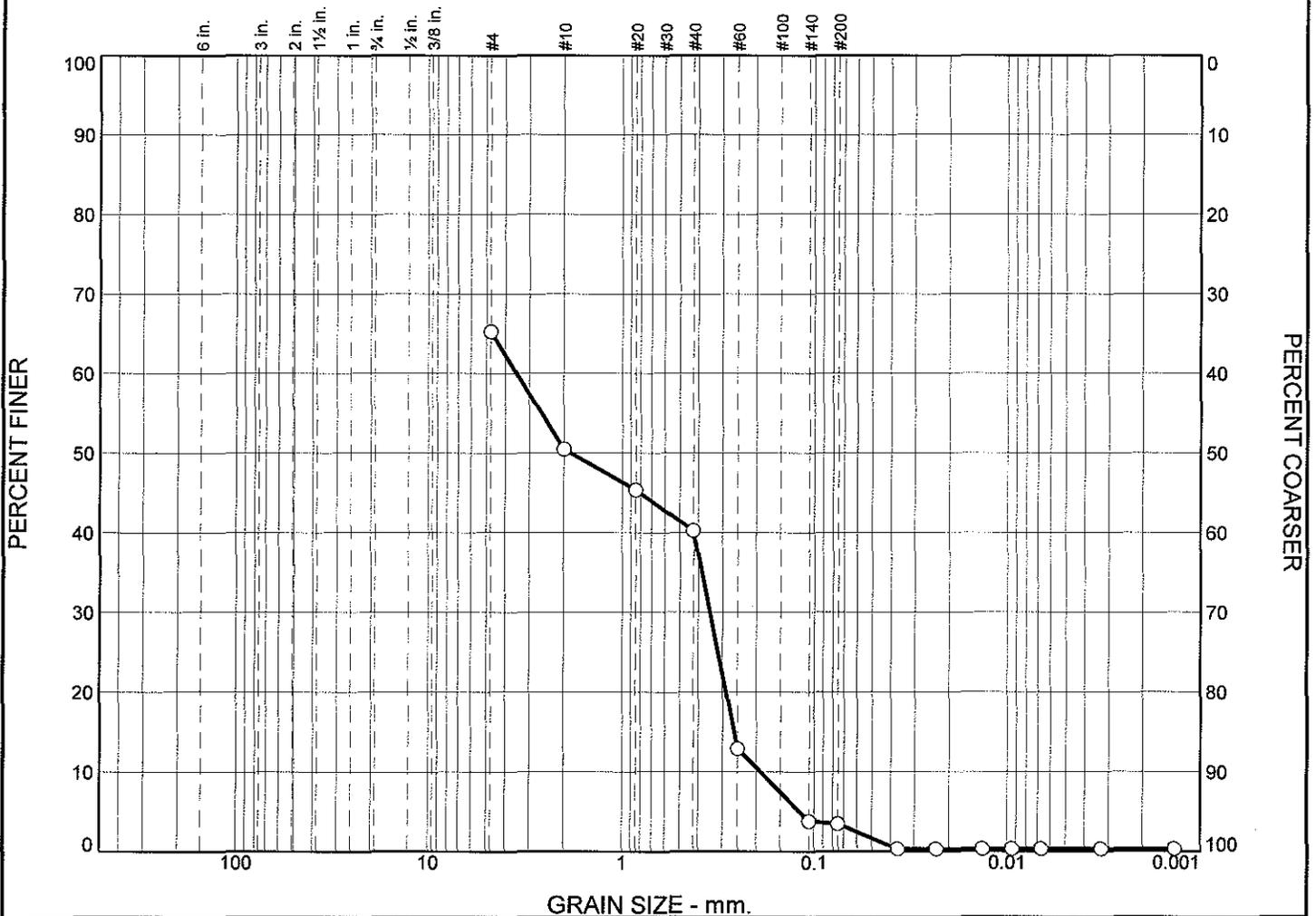
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.3      | 1.5     | 0.9  | 0.6  | 0.7  | 10.6    | 14.3  | 37.0 | 8.1  | 9.5  | 5.4     | 60.0  | 24.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0018          | 0.0082          | 0.0330          | 0.0398          | 0.0580          | 0.0637          | 0.0700          | 0.1899          |

| Fineness Modulus |
|------------------|
| 0.18             |

Alpha Analytical

# Particle Size Distribution Report



| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 11.8       | 4.2     | 4.9  | 28.5 | 7.4  | 2.9     | 2.3    | 0.0  | 0.0  |         | 0.3    |

| LL | PL | D85 | D60    | D50    | D30    | D15    | D10    | Cc   | Cu    |
|----|----|-----|--------|--------|--------|--------|--------|------|-------|
| ○  |    |     | 3.4927 | 1.8524 | 0.3484 | 0.2604 | 0.1902 | 0.18 | 18.36 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503611    <b>Sample Number:</b> L0912913-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912913  
 Location: 503611  
 Sample Number: L0912913-09  
 USCS Classification: SP  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 124.43  
 Tare Wt. = 4.50  
 Minus #200 from wash = 2.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 122.78                      | 0.00         | #4                 | 564.42                  | 521.77               | 65.3          | 34.7             |
|                             |              | #10                | 502.99                  | 484.81               | 50.5          | 49.5             |
|                             |              | #20                | 411.67                  | 405.42               | 45.4          | 54.6             |
|                             |              | #40                | 369.04                  | 362.74               | 40.2          | 59.8             |
|                             |              | #60                | 399.72                  | 366.16               | 12.9          | 87.1             |
|                             |              | #140               | 354.01                  | 342.82               | 3.8           | 96.2             |
|                             |              | #200               | 345.67                  | 345.25               | 3.4           | 96.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 3.4  
 Weight of hydrometer sample = 122.78  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 0.3           | 99.7             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.3           | 99.7             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.3           | 99.7             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.3           | 99.7             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.3           | 99.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.3           | 99.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.3           | 99.7             |

## Fractional Components

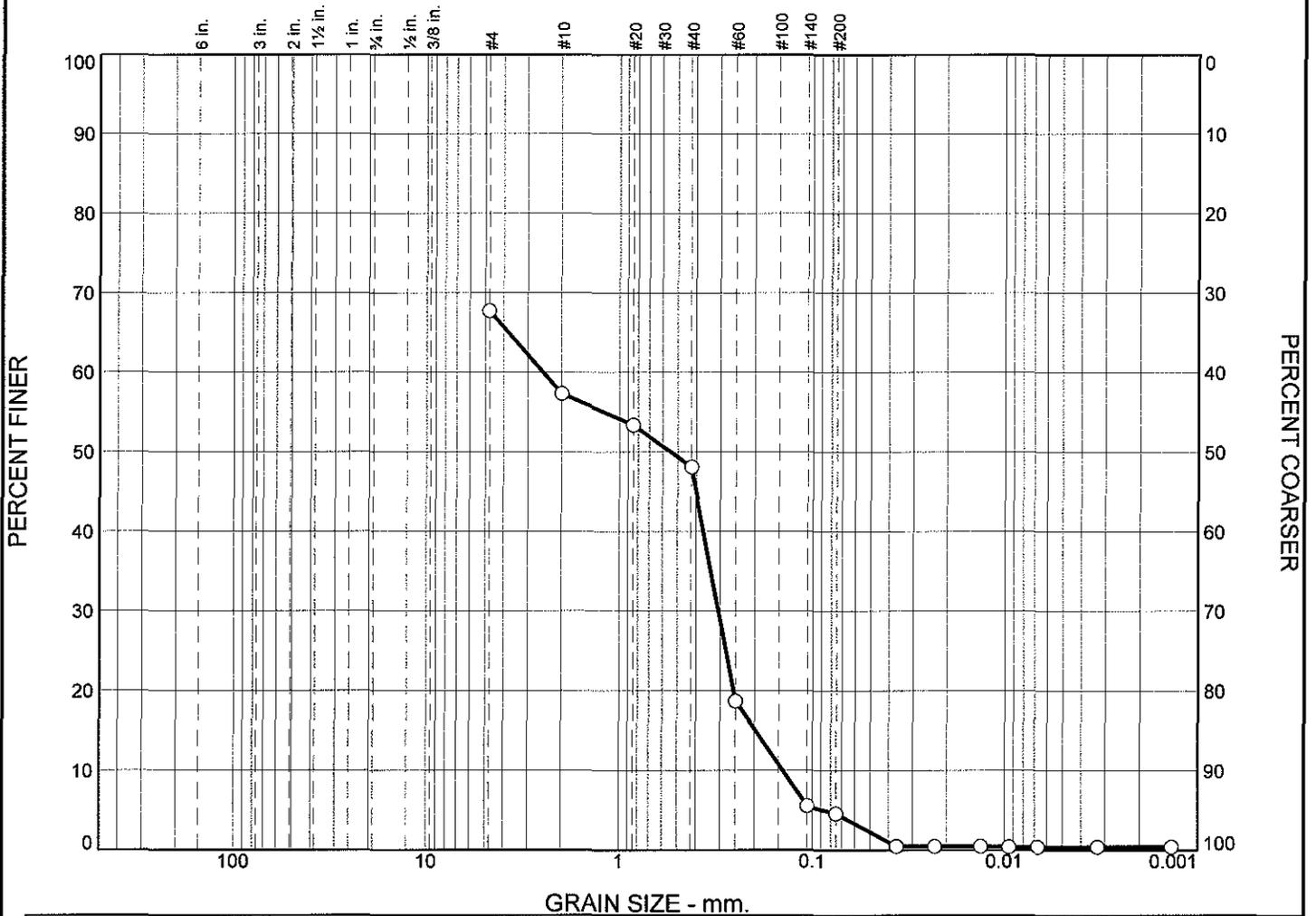
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 11.8     | 4.2     | 4.9  | 28.5 | 7.4  | 2.9     | 47.9  | 2.3  | 0.0  | 0.0  |         | 2.3   | 0.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1902          | 0.2604          | 0.2869          | 0.3484          | 1.8524          | 3.4927          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.62             | 18.36          | 0.18           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        | % Silt  |       |      |      | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|-------|------|------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.  | Med. | Fine |        |
| ○ |            |           |           | 8.4        | 3.2     | 4.8    | 30.6   | 10.6   | 4.6     | 3.0   | 0.0  | 0.1  | 0.4    |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu    |      |      |        |
| ○ |            |           |           | 2.5055     | 0.5451  | 0.3065 | 0.1964 | 0.1418 | 0.26    | 17.67 |      |      |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503612    <b>Sample Number:</b> L0912913-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912913  
 Location: 503612  
 Sample Number: L0912913-10  
 USCS Classification: SP  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 123.86  
 Tare Wt. = 4.55  
 Minus #200 from wash = 4.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 125.05                      | 0.00         | #4                 | 561.15                  | 520.81               | 67.7          | 32.3             |
|                             |              | #10                | 495.20                  | 482.11               | 57.3          | 42.7             |
|                             |              | #20                | 415.98                  | 411.09               | 53.4          | 46.6             |
|                             |              | #40                | 384.42                  | 377.86               | 48.1          | 51.9             |
|                             |              | #60                | 406.63                  | 369.84               | 18.7          | 81.3             |
|                             |              | #140               | 363.62                  | 347.17               | 5.5           | 94.5             |
|                             |              | #200               | 347.72                  | 346.51               | 4.6           | 95.4             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 4.6  
 Weight of hydrometer sample = 125.05  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.5           | 99.5             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 0.5           | 99.5             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 0.5           | 99.5             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.4           | 99.6             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.4           | 99.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.4           | 99.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.4           | 99.6             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 8.4      | 3.2     | 4.8  | 30.6 | 10.6 | 4.6     | 53.8  | 3.0  | 0.0  | 0.1  |         | 3.1   | 0.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1418          | 0.1964          | 0.2559          | 0.3065          | 0.5451          | 2.5055          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.28             | 17.67          | 0.26           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912913  
 Location: 503613  
 Sample Number: L0912913-11  
 USCS Classification: SP  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 118.09  
 Tare Wt. = 4.60  
 Minus #200 from wash = 2.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 116.44                      | 0.00         | #4                 | 556.25                  | 521.77               | 70.4          | 29.6             |
|                             |              | #10                | 498.64                  | 484.81               | 58.5          | 41.5             |
|                             |              | #20                | 412.02                  | 405.42               | 52.8          | 47.2             |
|                             |              | #40                | 371.71                  | 362.74               | 45.1          | 54.9             |
|                             |              | #60                | 404.97                  | 366.16               | 11.8          | 88.2             |
|                             |              | #140               | 353.02                  | 342.82               | 3.0           | 97.0             |
|                             |              | #200               | 345.80                  | 345.25               | 2.6           | 97.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 2.6  
 Weight of hydrometer sample = 116.44  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times Rm$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0367         | 0.3           | 99.7             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.3           | 99.7             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.3           | 99.7             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.3           | 99.7             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.3           | 99.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.3           | 99.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.3           | 99.7             |

## Fractional Components

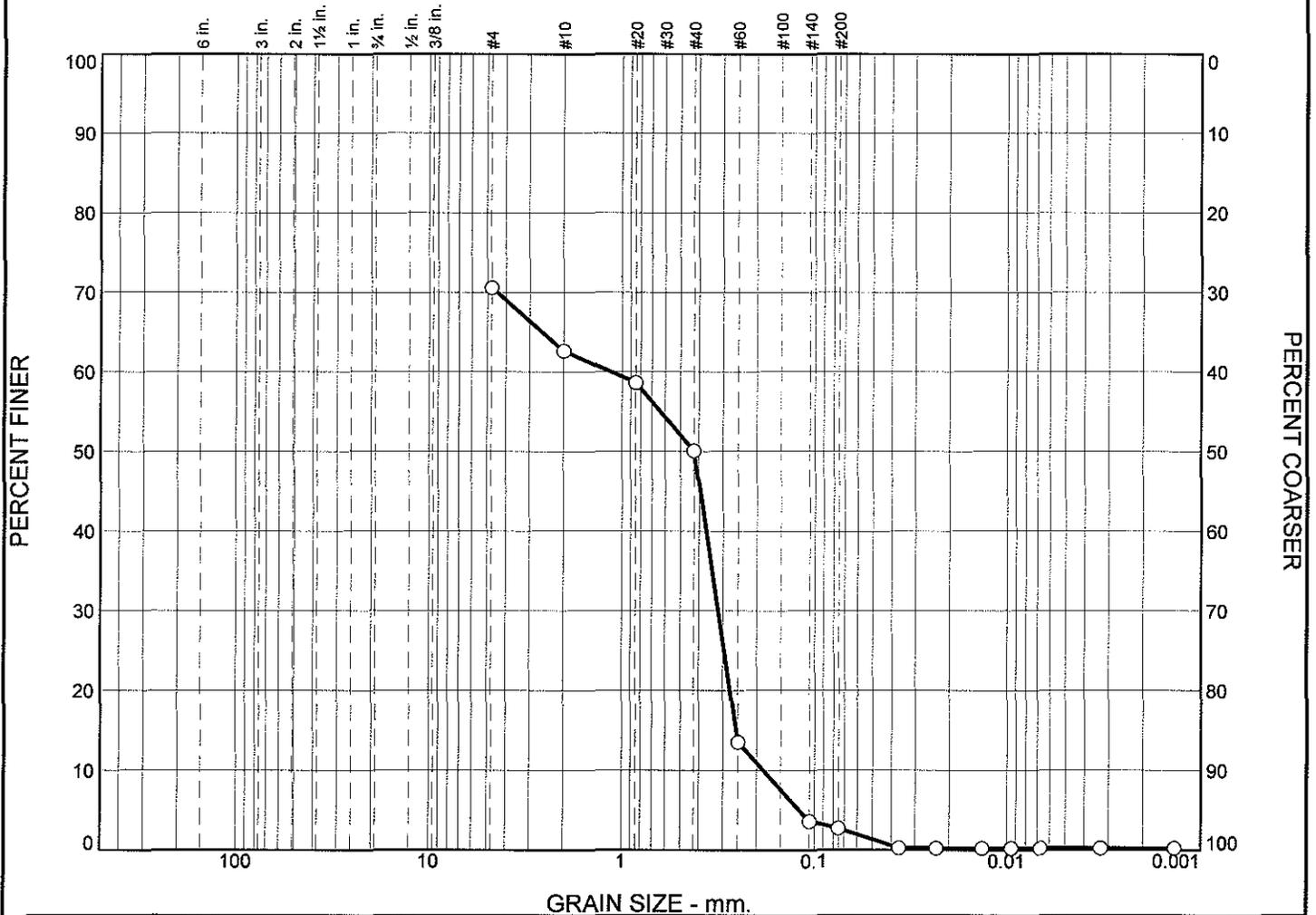
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 9.5      | 4.6     | 7.0  | 35.1 | 7.1  | 2.7     | 56.5  | 1.7  | 0.0  | 0.0  |         | 1.7   | 0.3  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80 | D85 | D90 | D95 |
|--------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 0.2094 | 0.2630 | 0.2848 | 0.3340 | 0.6582 | 2.2291 |     |     |     |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.35             | 10.64          | 0.24           |

Alpha Analytical

# Particle Size Distribution Report



| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 6.4        | 3.2     | 7.3  | 38.6 | 8.0  | 3.4     | 1.8    | 0.1  | 0.0  |         | 0.2    |

| LL | PL | D85 | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|----|----|-----|--------|--------|--------|--------|--------|------|------|
| ○  |    |     | 1.1381 | 0.4246 | 0.3176 | 0.2555 | 0.1845 | 0.48 | 6.17 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503626    <b>Sample Number:</b> L0912913-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503626

Sample Number: L0912913-12

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 132.85  
 Tare Wt. = 4.51  
 Minus #200 from wash = 2.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 131.79                      | 0.00         | #4                 | 559.58                  | 520.81               | 70.6          | 29.4             |
|                             |              | #10                | 492.61                  | 482.11               | 62.6          | 37.4             |
|                             |              | #20                | 416.32                  | 411.09               | 58.6          | 41.4             |
|                             |              | #40                | 389.16                  | 377.86               | 50.1          | 49.9             |
|                             |              | #60                | 418.02                  | 369.84               | 13.5          | 86.5             |
|                             |              | #140               | 360.25                  | 347.17               | 3.6           | 96.4             |
|                             |              | #200               | 347.66                  | 346.51               | 2.7           | 97.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 2.7

Weight of hydrometer sample = 131.79

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 0.3           | 99.7             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 0.2           | 99.8             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 0.2           | 99.8             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 0.2           | 99.8             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 0.2           | 99.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 0.2           | 99.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 0.2           | 99.8             |

## Fractional Components

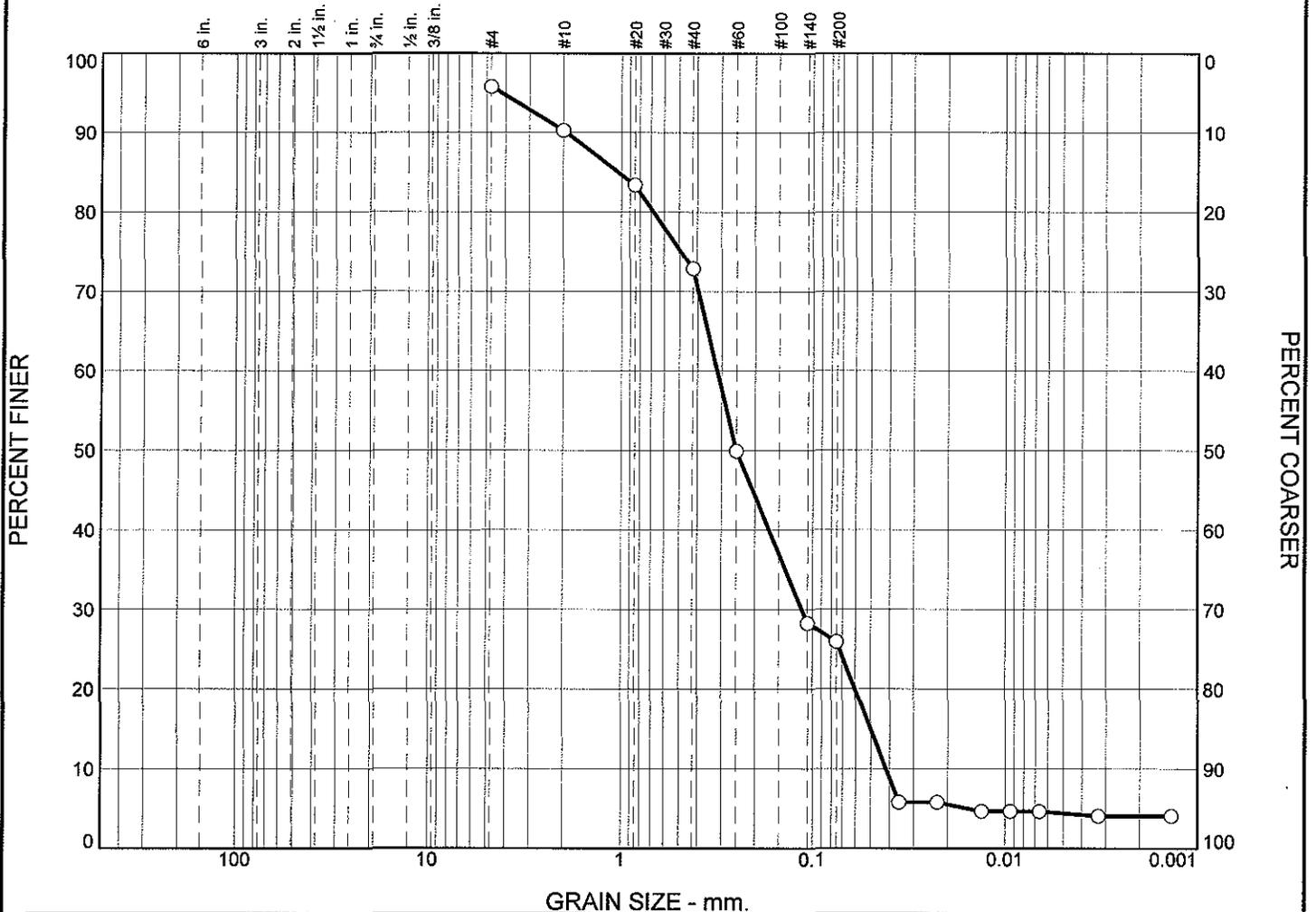
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.4      | 3.2     | 7.3  | 38.6 | 8.0  | 3.4     | 60.5  | 1.8  | 0.1  | 0.0  |         | 1.9   | 0.2  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80 | D85 | D90 | D95 |
|--------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 0.1845 | 0.2555 | 0.2747 | 0.3176 | 0.4246 | 1.1381 |     |     |     |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.17             | 6.17           | 0.48           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |     |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|-----|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |     |
| ○ |            |           |                 |                 | 4.4             | 5.6             | 9.3             | 25.5            | 17.5           | 11.4           | 15.2 | 0.8  | 0.4     | 0.4    | 4.2 |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |     |
| ○ |            |           | 1.0377          | 0.3155          | 0.2504          | 0.1135          | 0.0502          | 0.0418          | 0.98           | 7.55           |      |      |         |        |     |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503711    <b>Sample Number:</b> L0912913-13</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503711

Sample Number: L0912913-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 59.96  
 Tare Wt. = 4.76  
 Minus #200 from wash = 25.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 73.77                       | 0.00         | #4                 | 524.88                  | 521.77               | 95.8          | 4.2              |
|                             |              | #10                | 488.87                  | 484.81               | 90.3          | 9.7              |
|                             |              | #20                | 410.50                  | 405.42               | 83.4          | 16.6             |
|                             |              | #40                | 370.49                  | 362.74               | 72.9          | 27.1             |
|                             |              | #60                | 383.09                  | 366.16               | 49.9          | 50.1             |
|                             |              | #140               | 358.81                  | 342.82               | 28.3          | 71.7             |
|                             |              | #200               | 346.95                  | 345.25               | 26.0          | 74.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 26.0

Weight of hydrometer sample = 73.77

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 5.8           | 94.2             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 5.8           | 94.2             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 4.6           | 95.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 4.6           | 95.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 4.6           | 95.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 4.1           | 95.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 4.1           | 95.9             |

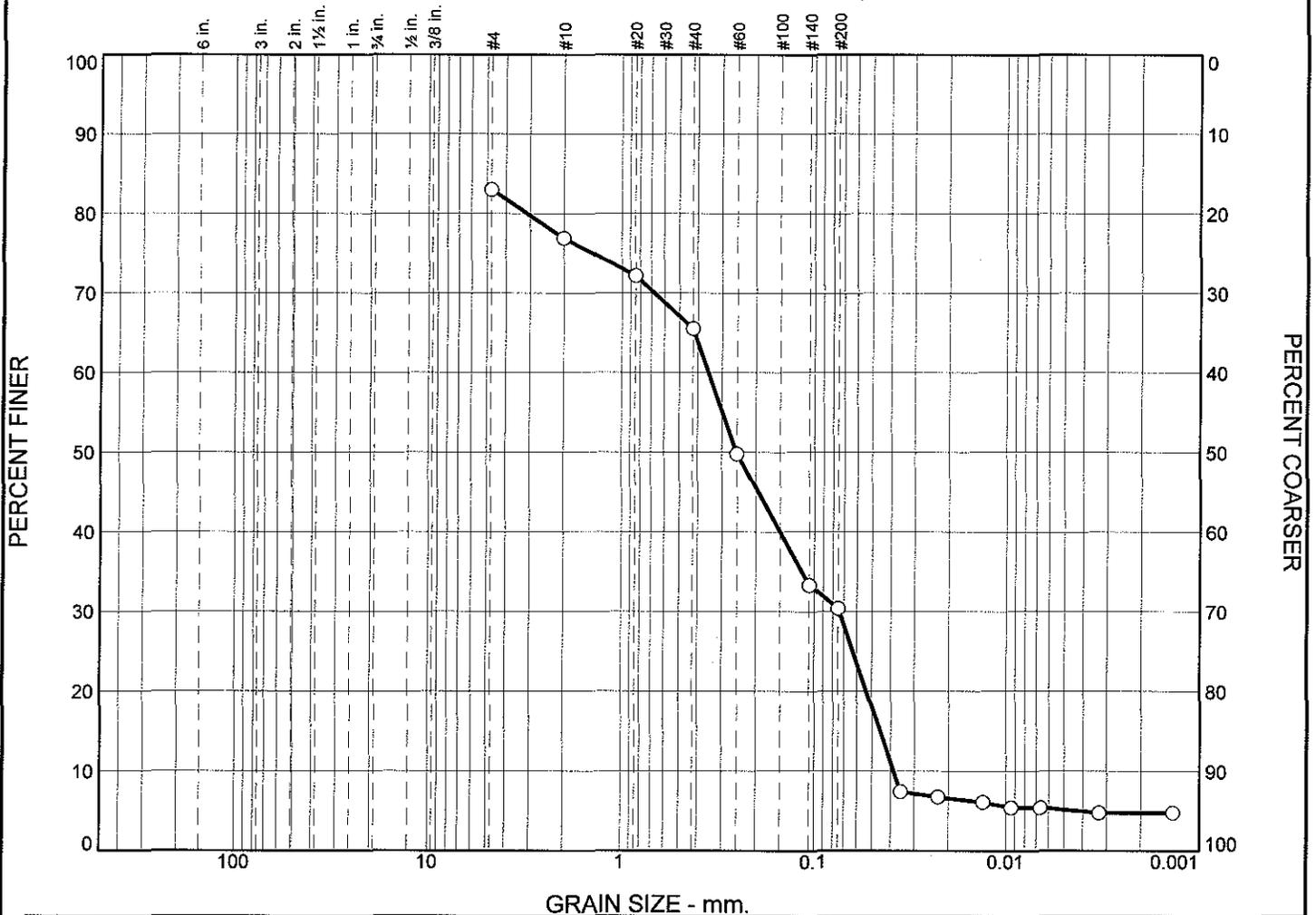
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.4      | 5.6     | 9.3  | 25.5 | 17.5 | 11.4    | 69.3  | 15.2 | 0.8  | 0.4  | 0.4     | 16.8  | 4.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0418          | 0.0502          | 0.0603          | 0.1135          | 0.2504          | 0.3155          | 0.6794          | 1.0377          | 1.9315          | 4.1992          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.54             | 7.55           | 0.98           |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |     |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|-----|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |     |
| ○ |            |           |           |            | 4.9     | 3.9    | 5.9    | 17.3   | 13.3    | 11.7   | 17.6 | 0.9  | 0.9     | 0.5    | 4.9 |
| × | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |     |
| ○ |            |           |           | 0.3527     | 0.2518  | 0.0741 | 0.0454 | 0.0386 | 0.40    | 9.14   |      |      |         |        |     |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503712    <b>Sample Number:</b> L0912913-14</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912913  
 Location: 503712  
 Sample Number: L0912913-14  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 56.41  
 Tare Wt. = 4.10  
 Minus #200 from wash = 29.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 73.81                       | 0.00         | #4                 | 533.35                  | 520.81               | 83.0          | 17.0             |
|                             |              | #10                | 486.64                  | 482.11               | 76.9          | 23.1             |
|                             |              | #20                | 414.58                  | 411.09               | 72.1          | 27.9             |
|                             |              | #40                | 382.74                  | 377.86               | 65.5          | 34.5             |
|                             |              | #60                | 381.46                  | 369.84               | 49.8          | 50.2             |
|                             |              | #140               | 359.33                  | 347.17               | 33.3          | 66.7             |
|                             |              | #200               | 348.69                  | 346.51               | 30.4          | 69.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 30.4  
 Weight of hydrometer sample = 73.81  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 7.4           | 92.6             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 6.7           | 93.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 6.1           | 93.9             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 5.4           | 94.6             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 5.4           | 94.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 4.8           | 95.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 4.8           | 95.2             |

## Fractional Components

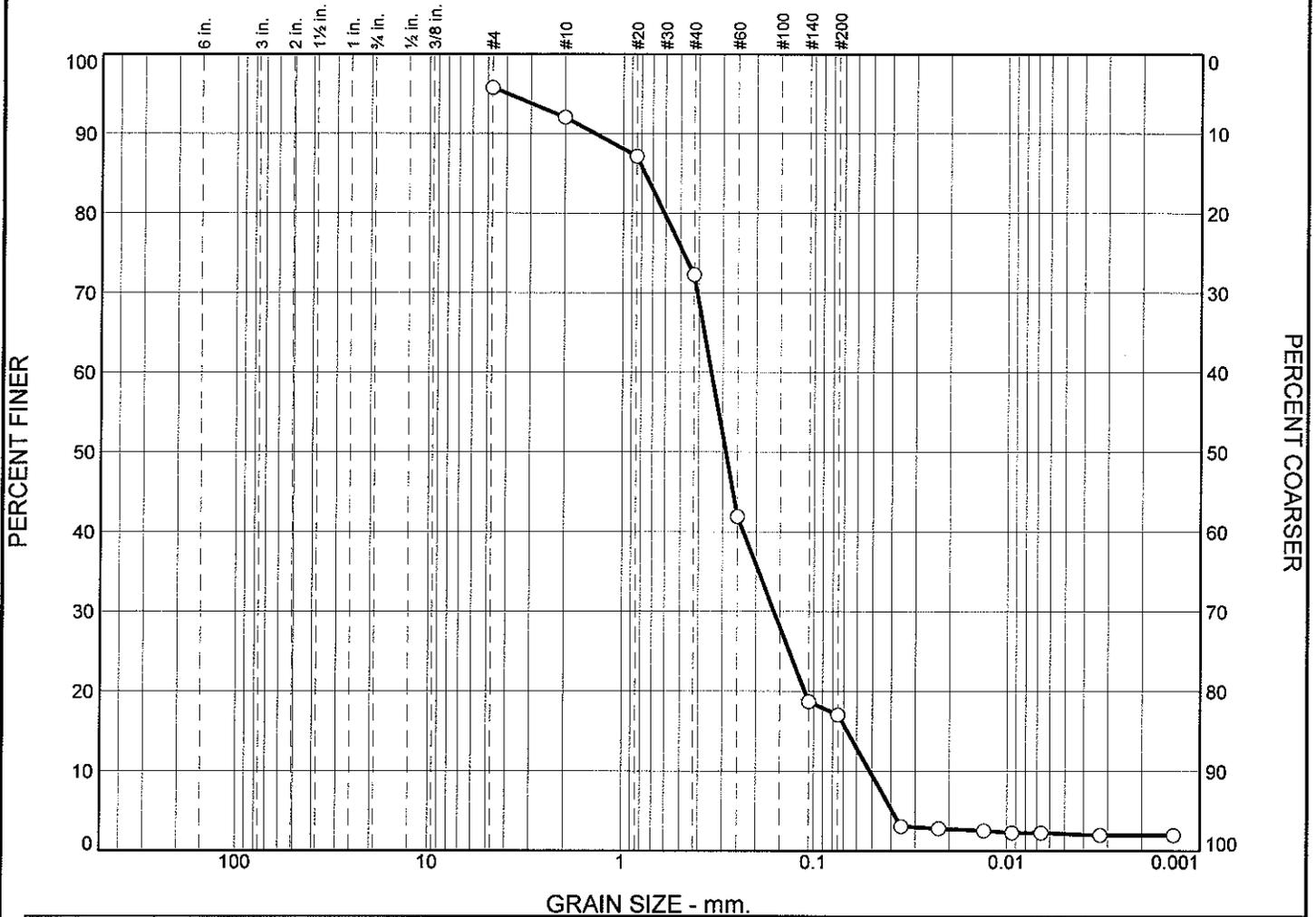
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.9      | 3.9     | 5.9  | 17.3 | 13.3 | 11.7    | 52.1  | 17.6 | 0.9  | 0.9  | 0.5     | 19.9  | 4.9  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85 | D90 | D95 |
|--------|--------|--------|--------|--------|--------|--------|-----|-----|-----|
| 0.0386 | 0.0454 | 0.0535 | 0.0741 | 0.2518 | 0.3527 | 3.1076 |     |     |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.01             | 9.14           | 0.40           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                       | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      | % Silt  |      |      |      | % Clay |         |
|-----------------------|------------|-----------|-----------|------------|---------|------|------|------|---------|------|------|------|--------|---------|
|                       |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| <input type="radio"/> |            |           |           | 3.0        | 3.9     | 12.4 | 33.8 | 18.7 | 9.6     | 10.6 | 0.4  | 0.4  | 0.2    | 2.0     |

| <input checked="" type="checkbox"/> | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|-------------------------------------|----|----|--------|--------|--------|--------|--------|--------|------|------|
| <input type="radio"/>               |    |    | 0.7694 | 0.3430 | 0.2880 | 0.1610 | 0.0673 | 0.0514 | 1.47 | 6.67 |

| Material Description  |  |  |  |  |  |  |  | USCS | AASHTO |
|-----------------------|--|--|--|--|--|--|--|------|--------|
| <input type="radio"/> |  |  |  |  |  |  |  |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912913 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 503713 <b>Sample Number:</b> L0912913-15 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503713

Sample Number: L0912913-15

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 88.70  
 Tare Wt. = 4.92  
 Minus #200 from wash = 16.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 99.99                       | 0.00         | #4                 | 525.98                  | 521.77               | 95.8          | 4.2              |
|                             |              | #10                | 488.57                  | 484.81               | 92.0          | 8.0              |
|                             |              | #20                | 410.31                  | 405.42               | 87.1          | 12.9             |
|                             |              | #40                | 377.62                  | 362.74               | 72.3          | 27.7             |
|                             |              | #60                | 396.51                  | 366.16               | 41.9          | 58.1             |
|                             |              | #140               | 366.03                  | 342.82               | 18.7          | 81.3             |
|                             |              | #200               | 346.91                  | 345.25               | 17.0          | 83.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 17.0

Weight of hydrometer sample = 99.99

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 3.1           | 96.9             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 2.8           | 97.2             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 2.5           | 97.5             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 2.2           | 97.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 2.2           | 97.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 2.0           | 98.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.0           | 98.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.0      | 3.9     | 12.4 | 33.8 | 18.7 | 9.6     | 78.4  | 10.6 | 0.4  | 0.4  | 0.2     | 11.6  | 2.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0514          | 0.0673          | 0.1113          | 0.1610          | 0.2880          | 0.3430          | 0.6096          | 0.7694          | 1.4023          | 3.9611          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.62             | 6.67           | 1.47           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503726

Sample Number: L0912913-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 57.61  
 Tare Wt. = 4.61  
 Minus #200 from wash = 36.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 83.33                       | 0.00         | #4                 | 524.07                  | 520.81               | 96.1          | 3.9              |
|                             |              | #10                | 485.45                  | 482.11               | 92.1          | 7.9              |
|                             |              | #20                | 415.56                  | 411.09               | 86.7          | 13.3             |
|                             |              | #40                | 388.21                  | 377.86               | 74.3          | 25.7             |
|                             |              | #60                | 385.44                  | 369.84               | 55.6          | 44.4             |
|                             |              | #140               | 360.36                  | 347.17               | 39.7          | 60.3             |
|                             |              | #200               | 349.19                  | 346.51               | 36.5          | 63.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 36.5

Weight of hydrometer sample = 83.33

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 9.3           | 90.7             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 7.9           | 92.1             |
| 15.00               | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0  | 14.4       | 0.0131         | 7.2           | 92.8             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 6.5           | 93.5             |
| 60.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0066         | 6.5           | 93.5             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0033         | 5.8           | 94.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 5.1           | 94.9             |

## Fractional Components

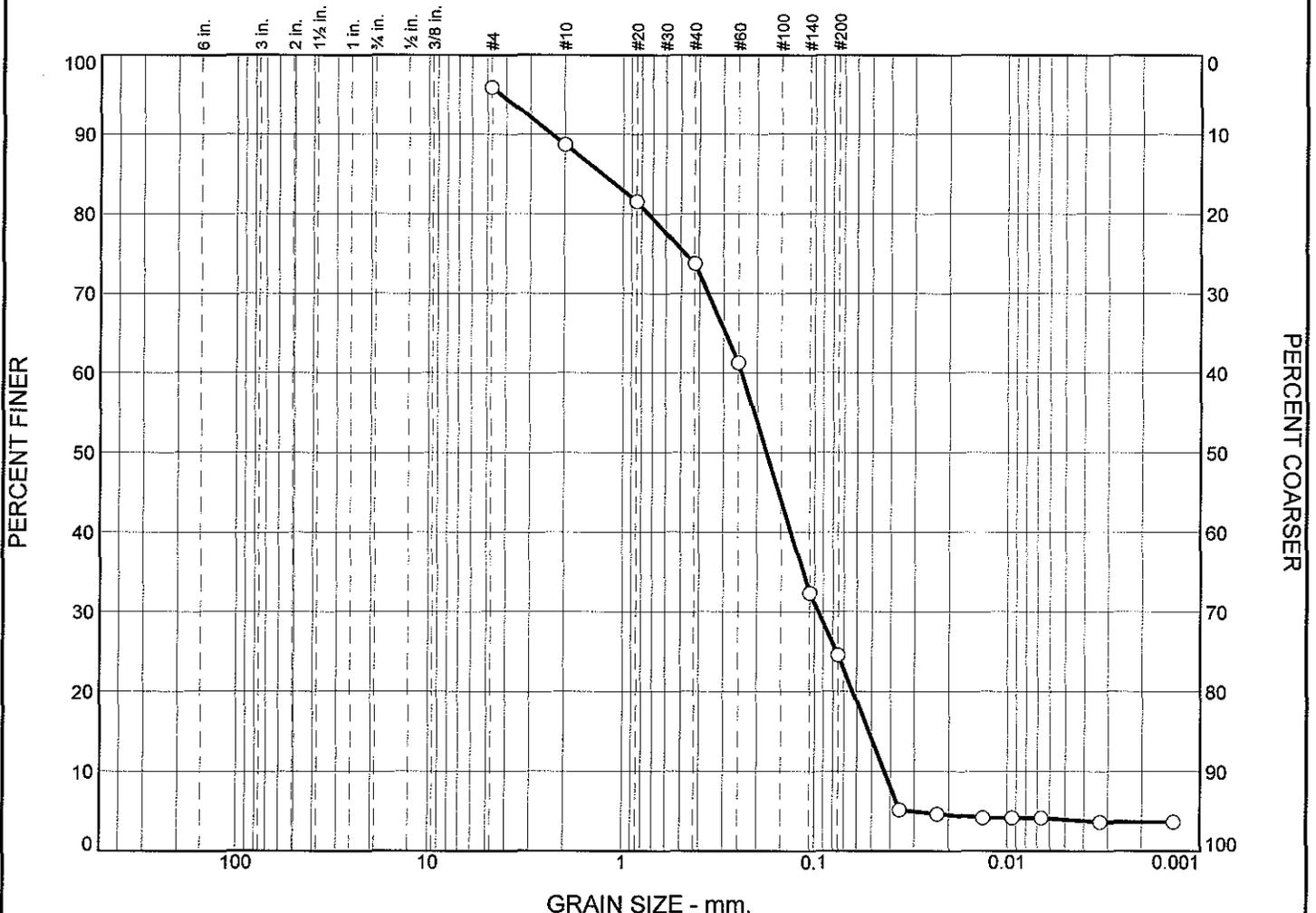
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.2      | 4.4     | 10.5 | 21.6 | 12.8 | 12.7    | 62.0  | 21.2 | 1.5  | 0.9  | 0.5     | 24.1  | 6.0  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0355 | 0.0408 | 0.0470 | 0.0624 | 0.1848 | 0.2834 | 0.5843 | 0.7724 | 1.4354 | 3.7561 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.34             | 7.99           | 0.39           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |          |   |         |   |         |   |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |   |         |   |         |   | 5.8      | 5.8     | 7.3  | 14.3 | 23.4 | 18.1    | 14.8   | 0.7  | 0.1  | 0.4     | 3.8    |

| × | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|---|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○ |    |    | 1.2821 | 0.2406 | 0.1788 | 0.0954 | 0.0521 | 0.0430 | 0.88 | 5.59 |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503811    <b>Sample Number:</b> L0912913-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503811

Sample Number: L0912913-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 64.28  
 Tare Wt. = 4.71  
 Minus #200 from wash = 23.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 78.03                       | 0.00         | #4                 | 524.96                  | 521.77               | 95.9          | 4.1              |
|                             |              | #10                | 490.43                  | 484.81               | 88.7          | 11.3             |
|                             |              | #20                | 410.99                  | 405.42               | 81.6          | 18.4             |
|                             |              | #40                | 368.83                  | 362.74               | 73.8          | 26.2             |
|                             |              | #60                | 375.90                  | 366.16               | 61.3          | 38.7             |
|                             |              | #140               | 365.37                  | 342.82               | 32.4          | 67.6             |
|                             |              | #200               | 351.34                  | 345.25               | 24.6          | 75.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 24.6

Weight of hydrometer sample = 78.03

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 5.2           | 94.8             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 4.7           | 95.3             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 4.2           | 95.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 4.2           | 95.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 4.2           | 95.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 3.6           | 96.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 3.6           | 96.4             |

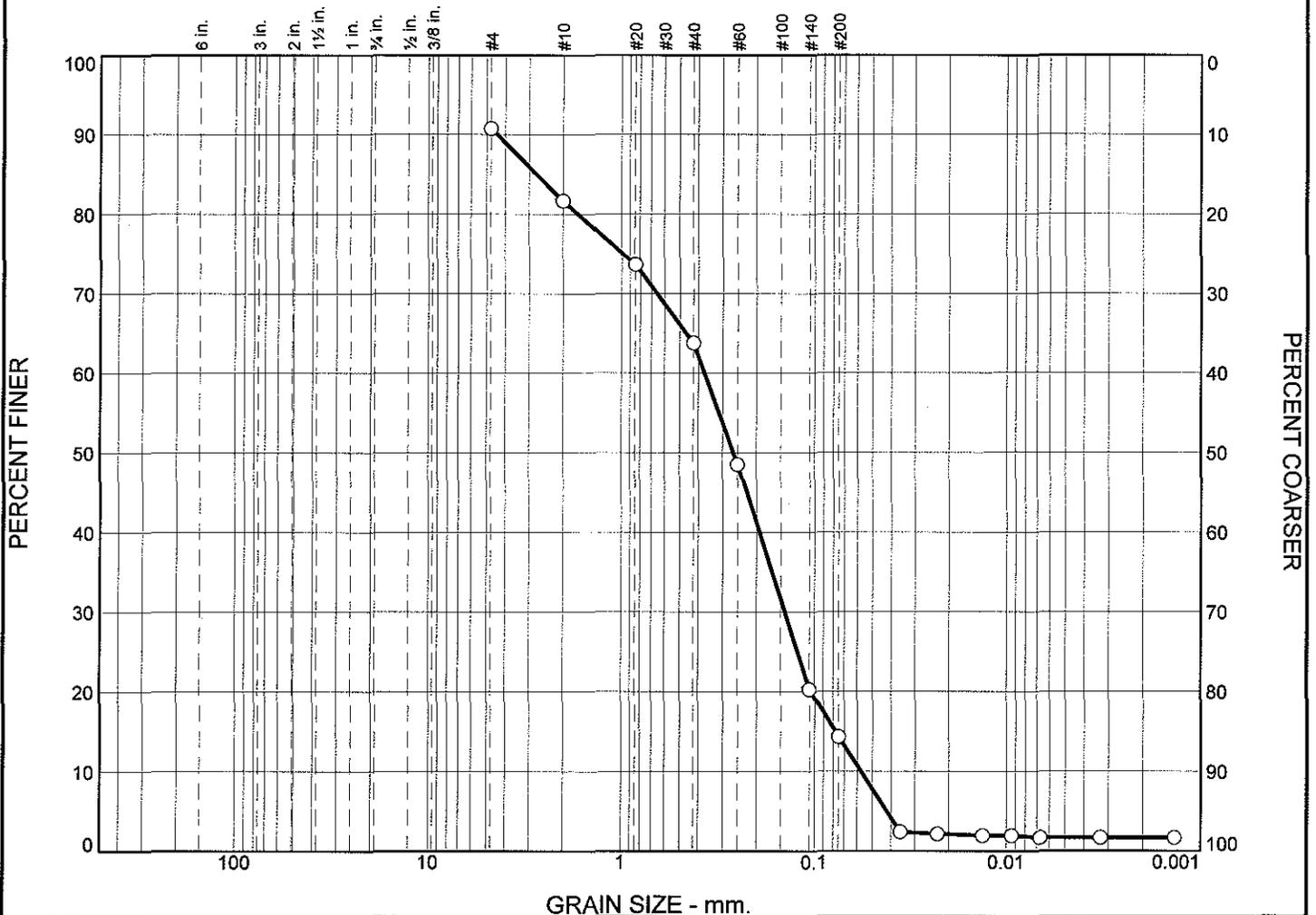
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.8      | 5.8     | 7.3  | 14.3 | 23.4 | 18.1    | 68.9  | 14.8 | 0.7  | 0.1  | 0.4     | 16.0  | 3.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0430          | 0.0521          | 0.0630          | 0.0954          | 0.1788          | 0.2406          | 0.7393          | 1.2821          | 2.3353          | 4.2573          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.42             | 5.59           | 0.88           |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 7.4             | 6.4             | 9.1             | 17.6            | 22.8            | 14.3           | 9.1            | 0.3  | 0.2  | 0.1     | 1.7    |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 2.7480          | 0.3727          | 0.2632          | 0.1424          | 0.0780          | 0.0574          | 0.95           | 6.50           |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503812    <b>Sample Number:</b> L0912913-18</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503812

Sample Number: L0912913-18

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 89.95

Tare Wt. = 4.74

Minus #200 from wash = 13.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 98.41                       | 0.00         | #4                 | 529.89                  | 520.81               | 90.8          | 9.2              |
|                             |              | #10                | 491.09                  | 482.11               | 81.6          | 18.4             |
|                             |              | #20                | 418.95                  | 411.09               | 73.7          | 26.3             |
|                             |              | #40                | 387.59                  | 377.86               | 63.8          | 36.2             |
|                             |              | #60                | 384.85                  | 369.84               | 48.5          | 51.5             |
|                             |              | #140               | 374.95                  | 347.17               | 20.3          | 79.7             |
|                             |              | #200               | 352.38                  | 346.51               | 14.3          | 85.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 14.3

Weight of hydrometer sample = 98.41

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 2.4           | 97.6             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 2.2           | 97.8             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.9           | 98.1             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.9           | 98.1             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 1.7           | 98.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.7           | 98.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.7           | 98.3             |

## Fractional Components

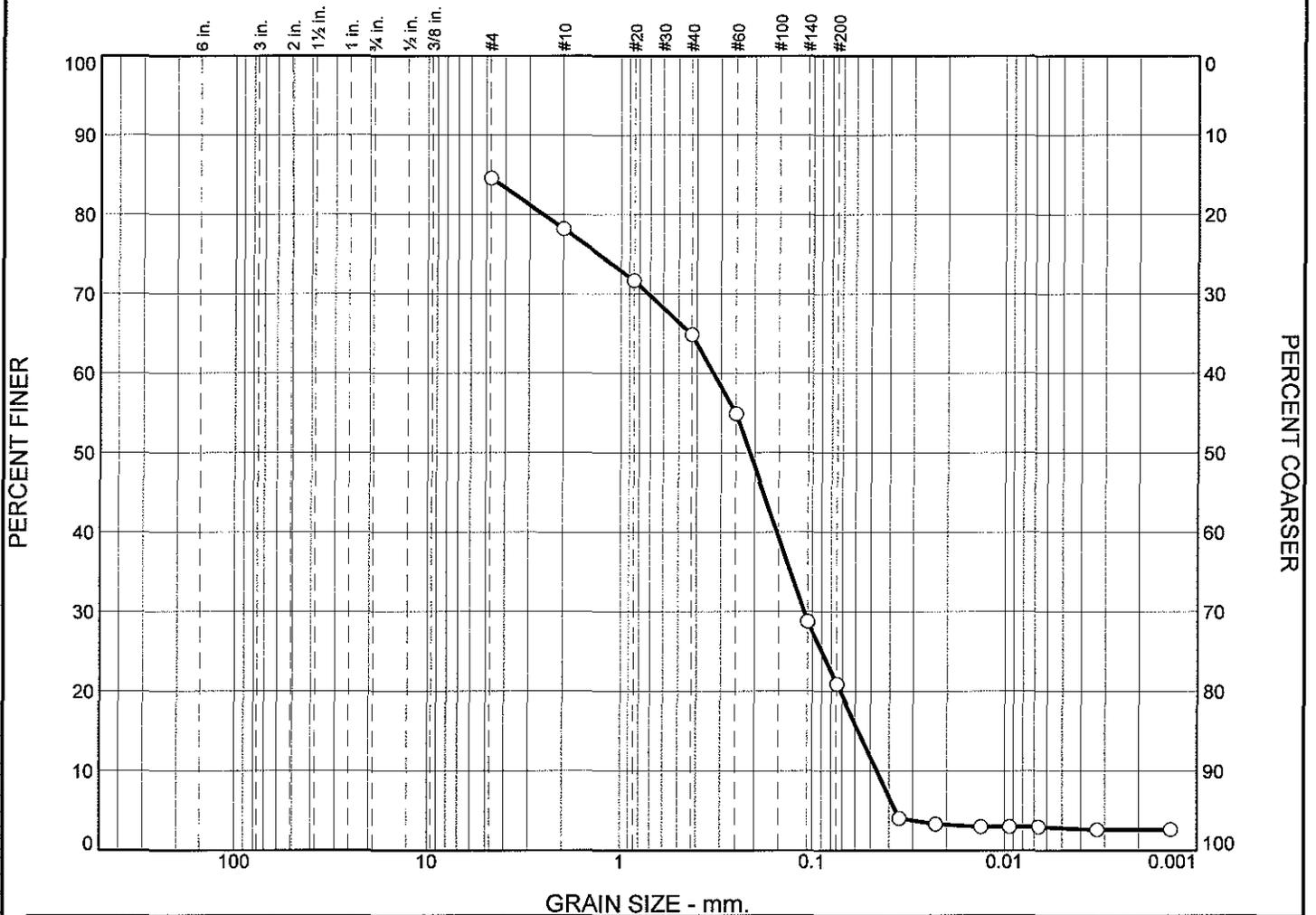
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.4      | 6.4     | 9.1  | 17.6 | 22.8 | 14.3    | 70.2  | 9.1  | 0.3  | 0.2  | 0.1     | 9.7   | 1.7  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0574          | 0.0780          | 0.1042          | 0.1424          | 0.2632          | 0.3727          | 1.6763          | 2.7480          | 4.4143          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.95             | 6.50           | 0.95           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |           | 5.1        | 5.3     | 6.4    | 11.6   | 21.1   | 17.0    | 13.0   | 0.7  | 0.1  | 0.3     | 2.7    |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| <input type="radio"/>               |            |           |           | 0.3281     | 0.2129  | 0.1103 | 0.0577 | 0.0462 | 0.80    | 7.10   |      |      |         |        |

| Material Description  |  |  |  |  |  |  |  | USCS | AASHTO |
|-----------------------|--|--|--|--|--|--|--|------|--------|
| <input type="radio"/> |  |  |  |  |  |  |  |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912913 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 503813 <b>Sample Number:</b> L0912913-19 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912913

Location: 503813

Sample Number: L0912913-19

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 79.26  
 Tare Wt. = 4.58  
 Minus #200 from wash = 19.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 93.03                       | 0.00         | #4                 | 536.12                  | 521.77               | 84.6          | 15.4             |
|                             |              | #10                | 490.76                  | 484.81               | 78.2          | 21.8             |
|                             |              | #20                | 411.46                  | 405.42               | 71.7          | 28.3             |
|                             |              | #40                | 369.09                  | 362.74               | 64.9          | 35.1             |
|                             |              | #60                | 375.43                  | 366.16               | 54.9          | 45.1             |
|                             |              | #140               | 367.12                  | 342.82               | 28.8          | 71.2             |
|                             |              | #200               | 352.56                  | 345.25               | 20.9          | 79.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 20.9

Weight of hydrometer sample = 93.03

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 4.0           | 96.0             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 3.3           | 96.7             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 3.0           | 97.0             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 3.0           | 97.0             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 3.0           | 97.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 2.6           | 97.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.6           | 97.4             |

## Fractional Components

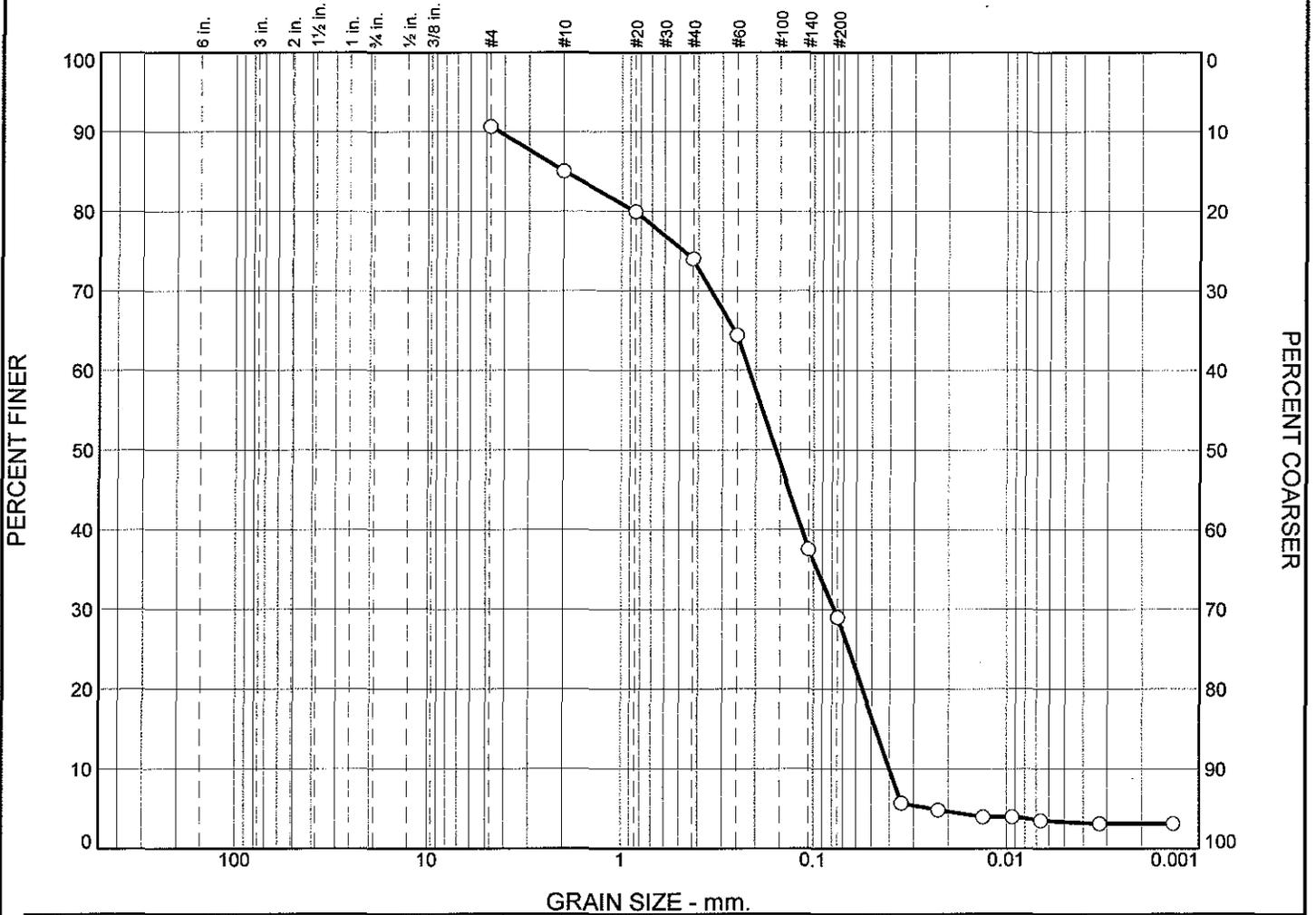
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.1      | 5.3     | 6.4  | 11.6 | 21.1 | 17.0    | 61.4  | 13.0 | 0.7  | 0.1  | 0.3     | 14.1  | 2.7  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85 | D90 | D95 |
|--------|--------|--------|--------|--------|--------|--------|-----|-----|-----|
| 0.0462 | 0.0577 | 0.0720 | 0.1103 | 0.2129 | 0.3281 | 2.5585 |     |     |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.96             | 7.10           | 0.80           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 4.5             | 4.2             | 5.5             | 11.0            | 21.7            | 19.2           | 18.0           | 1.3  | 0.5  | 0.5    | 3.2     |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 1.9821          | 0.2171          | 0.1578          | 0.0781          | 0.0473          | 0.0401          | 0.70           | 5.42           |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912913    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503826    <b>Sample Number:</b> L0912913-20</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912913  
 Location: 503826  
 Sample Number: L0912913-20  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 82.58  
 Tare Wt. = 4.86  
 Minus #200 from wash = 28.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 107.92                      | 0.00         | #4                 | 530.87                  | 520.81               | 90.7          | 9.3              |
|                             |              | #10                | 488.18                  | 482.11               | 85.1          | 14.9             |
|                             |              | #20                | 416.60                  | 411.09               | 79.9          | 20.1             |
|                             |              | #40                | 384.28                  | 377.86               | 74.0          | 26.0             |
|                             |              | #60                | 380.18                  | 369.84               | 64.4          | 35.6             |
|                             |              | #140               | 376.17                  | 347.17               | 37.5          | 62.5             |
|                             |              | #200               | 355.75                  | 346.51               | 29.0          | 71.0             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 29.0  
 Weight of hydrometer sample = 107.92  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0130         | 1.0132            | 0.0133 | 10.0 | 13.6       | 0.0348         | 5.7           | 94.3             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 4.8           | 95.2             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 4.0           | 96.0             |
| 30.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0093         | 4.0           | 96.0             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 3.5           | 96.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 3.1           | 96.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 3.1           | 96.9             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.5      | 4.2     | 5.5  | 11.0 | 21.7 | 19.2    | 61.6  | 18.0 | 1.3  | 0.5  | 0.5     | 20.3  | 3.2  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 0.0401 | 0.0473 | 0.0558 | 0.0781 | 0.1578 | 0.2171 | 0.8574 | 1.9821 | 4.2795 |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.48             | 5.42           | 0.70           |

## Certificate/Approval Program Summary

Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

### **New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. **NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

*Air* (Organic Parameters: EPA TO-15)

**U.S. Army Corps of Engineers**

**Department of Defense** Certificate/Lab ID: L2217.01.

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

#### **Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

Station 216

# CHAIN OF CUSTODY

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Serial No: 08

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:                      Time:

Date Rec'd in Lab:                      ALPHA Job #: 20912913

## Report Information Data Deliverables Billing Information

FAX                       EMAIL  
 ADEX                       Add'l Deliverables

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program                      Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 1                              | 503411    | 9-27-09    | 12:19 | SE            | JB                 |
| 2                              | 503412    | 9-27-09    | 12:34 | SE            | JB                 |
| 3                              | 503413    | 9-27-09    | 13:00 | SE            | JB                 |
|                                | 503425    | 9-27-09    | 12:28 | SE            | JB                 |
| 4                              | 503426    | 9-27-09    | 12:28 | SE            | JB                 |
|                                | 503427    | 9-27-09    | 12:28 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - |

|                  |               |                |               |
|------------------|---------------|----------------|---------------|
| Relinquished By: | Date/Time     | Received By:   | Date/Time     |
| James Baych      | 9/27/09 1605  | Peter Baych    | 9/27/09       |
| Bob Stump        | 9/28/09 09:13 | P. Dilbert     | 9/28/09 09:25 |
| P. Dilbert       | 9/28/09 10:20 | W. [Signature] | 9/28/09 100   |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY



Serial No: 08

016-17

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: **L0912913**

## Report Information Data Deliverables Billing Information

FAX     EMAIL     Same as Client info    PO #:  
 ADEx     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

|     |  |
|-----|--|
| fed |  |
|-----|--|

## ANALYSIS

| total PCB congeners NOAA 18 | TOC | grain size | archive |  |  |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |          |   |
|-----------------------------|-----|------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------|----------|---|
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
| 5                           |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
| 6                           |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
| 7                           |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
| 8                           |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed chem | 1 |
| 9                           |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed gs   | 1 |
| 10                          |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed arch | 1 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 5  | 503511 | 9/26/09 | 12:35 | SE | HC |
| 6  | 503512 | 9/26/09 | 12:35 | SE | HC |
| 7  | 503513 | 9/26/09 | 12:35 | SE | HC |
| 8  | 503525 | 9/26/09 | 12:57 | SE | HC |
| 9  | 503526 | 9/26/09 | 12:57 | SE | HC |
| 10 | 503527 | 9/26/09 | 12:57 | SE | HC |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>[Signature]</i> | 9/26/09 19:12 | <i>[Signature]</i> | 9/26/09 19:17 |
| <i>[Signature]</i> | 9/28/09 09:13 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY



Serial No: 08

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

## Turn-Around Time

Fax: 508-540-1001     Standard     Rush (ONLY IF PRE-APPROVED)

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha    Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 20912913

| Report Information                       | Data Deliverables                           | Billing Information  |
|--|---|--|
| <input type="checkbox"/> FAX             | <input checked="" type="checkbox"/> EMAIL   | <input checked="" type="checkbox"/> Same as Client info    PO #: |
| <input checked="" type="checkbox"/> ADEx | <input type="checkbox"/> Add'l Deliverables |  |

### Regulatory Requirements/Report Limits

| State/Fed Program | Criteria |
|-------------------|----------|
| fed               |          |

| ANALYSIS                    |     |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |
|-----------------------------|-----|-------------------------------------|-------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------|
| total PCB congeners NOAA 18 | TOC | grain size                          | archive                             |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |
|                             |     | <input checked="" type="checkbox"/> |                                     |  |  |  |  |  |  |  |  |  |  |  |  | ben gs   | 1               |
|                             |     | <input checked="" type="checkbox"/> |                                     |  |  |  |  |  |  |  |  |  |  |  |  | ben gs   | 1               |
|                             |     | <input checked="" type="checkbox"/> |                                     |  |  |  |  |  |  |  |  |  |  |  |  | ben gs   | 1               |
|                             |     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |  |  |  |  |  | sed chem   | 1               |
|                             |     | <input checked="" type="checkbox"/> |                                     |  |  |  |  |  |  |  |  |  |  |  |  | sed gs   | 1               |
|                             |     |                                     | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |  |  |  |  |  | sed arch   | 1               |
|                             |     |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |
|                             |     |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |
|                             |     |                                     |                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 503611    | 9/26/09    | 11:35 | SE            | HC                 |
| 10                             | 503612    | 9/26/09    | 11:35 | SE            | HC                 |
| 11                             | 503613    | 9/26/09    | 11:35 | SE            | HC                 |
|                                | 503625    | 9/26/09    | 11:15 | SE            | HC                 |
| 12                             | 503626    | 9/26/09    | 11:15 | SE            | HC                 |
|                                | 503627    | 9/26/09    | 11:15 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>[Signature]</i> | 9/24/09 19:12 | <i>[Signature]</i> | 9/26/09 09:17 |
| <i>[Signature]</i> | 9/28/09 09:13 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 220

# CHAIN OF CUSTODY

PAGE 39 OF 41



Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 40912913

## Report Information Data Deliverables Billing Information

FAX     EMAIL     Same as Client info    PO #:  
 ADEX     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 13                             | 503711    | 9-27-09    | 11:07 | SE            | JB                 |
| 14                             | 503712    | 9-27-09    | 11:24 | SE            | JB                 |
| 15                             | 503713    | 9-27-09    | 11:41 | SE            | JB                 |
|                                | 503725    | 9-27-09    | 11:11 | SE            | JB                 |
| 16                             | 503726    | 9-27-09    | 11:11 | SE            | JB                 |
|                                | 503727    | 9-27-09    | 11:11 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

|                  |               |              |               |
|------------------|---------------|--------------|---------------|
| Relinquished By: | Date/Time     | Received By: | Date/Time     |
| James Bajek      | 9/27/09 1605  | Beth Barry   | 9/27/09       |
| P. Dillert       | 9-28-09 09:15 | P. Dillert   | 9/28/09 9:25  |
|                  | 9/28/09 10:10 |              | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY



Serial No. 08

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

## Turn-Around Time

Fax: 508-540-1001     Standard     Rush (ONLY IF PRE-APPROVED)

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha    Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: L0912913

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 17                             | 503811    | 9/26/09    | 09:00 | SE            | HC                 |
| 18                             | 503812    | 9/26/09    | 09:00 | SE            | HC                 |
| 19                             | 503813    | 9/26/09    | 09:00 | SE            | HC                 |
|                                | 503825    | 9/26/09    | 09:04 | SE            | HC                 |
| 20                             | 503826    | 9/26/09    | 09:26 | SE            | HC                 |
|                                | 503827    | 9/26/09    | 09:05 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>[Signature]</i> | 9/24/09 19:12 | <i>[Signature]</i> | 9/26/09 19:17 |
| <i>[Signature]</i> | 9/28/09 09:13 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912914  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Phone:          | (508) 540-8080  |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 08/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912914-01                | 503911           | NEW BEDFORD, MA            | 09/26/09 10:08                  |
| L0912914-02                | 503912           | NEW BEDFORD, MA            | 09/26/09 10:08                  |
| L0912914-03                | 503913           | NEW BEDFORD, MA            | 09/26/09 10:08                  |
| L0912914-04                | 503926           | NEW BEDFORD, MA            | 09/26/09 10:08                  |
| L0912914-05                | 504011           | NEW BEDFORD, MA            | 09/25/09 08:35                  |
| L0912914-06                | 504012           | NEW BEDFORD, MA            | 09/25/09 08:35                  |
| L0912914-07                | 504013           | NEW BEDFORD, MA            | 09/25/09 08:35                  |
| L0912914-08                | 504026           | NEW BEDFORD, MA            | 09/25/09 08:25                  |
| L0912914-09                | 504111           | NEW BEDFORD, MA            | 09/25/09 12:13                  |
| L0912914-10                | 504112           | NEW BEDFORD, MA            | 09/25/09 12:38                  |
| L0912914-11                | 504113           | NEW BEDFORD, MA            | 09/25/09 12:45                  |
| L0912914-12                | 504126           | NEW BEDFORD, MA            | 09/25/09 12:22                  |
| L0912914-13                | 504211           | NEW BEDFORD, MA            | 09/25/09 09:58                  |
| L0912914-14                | 504212           | NEW BEDFORD, MA            | 09/25/09 09:58                  |
| L0912914-15                | 504213           | NEW BEDFORD, MA            | 09/25/09 09:58                  |
| L0912914-16                | 504226           | NEW BEDFORD, MA            | 09/25/09 10:02                  |
| L0912914-17                | 504311           | NEW BEDFORD, MA            | 09/25/09 11:14                  |
| L0912914-18                | 504312           | NEW BEDFORD, MA            | 09/25/09 11:14                  |
| L0912914-19                | 504313           | NEW BEDFORD, MA            | 09/25/09 11:14                  |
| L0912914-20                | 504326           | NEW BEDFORD, MA            | 09/25/09 11:18                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on February 3, 2010. The report was ammended to include revised Grain Size data.

### Grain Size

The WG383815-1 Laboratory Duplicate RPD is outside the acceptance criteria for sieve, gravel (42%), % very coarse sand (43%), % coarse sand (118%), clay (26%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Peter Henriksen

Title: Technical Director/Representative

Date: 08/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-01  
**Client ID:** 503911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 10:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 12.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.5   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 28.5   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 16.8   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-02  
**Client ID:** 503912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 10:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.00   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 51.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.0   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-03  
**Client ID:** 503913  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 10:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.00   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.20   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.20   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 32.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 13.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-04  
**Client ID:** 503926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 10:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.40   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.20   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.8   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.7   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-05  
**Client ID:** 504011  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 40.2   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 29.8   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912914-06  
**Client ID:** 504012  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.20   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.0   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 46.9   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 20.2   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-07  
**Client ID:** 504013  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.8   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.0   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.2   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-08  
**Client ID:** 504026  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:25  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.80   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.20   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.9   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-09  
**Client ID:** 504111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 12:13  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.40   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 27.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 9.80   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-10  
**Client ID:** 504112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 12:38  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.2   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 37.7   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.5   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-11  
**Client ID:** 504113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 12:45  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 14.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 34.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-12  
**Client ID:** 504126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 12:22  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.40   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 20.2   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 20.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.7   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 17.5   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-13  
**Client ID:** 504211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 09:58  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.50   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.9   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 27.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-14  
**Client ID:** 504212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 09:58  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.80   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 38.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.0   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-15  
**Client ID:** 504213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 09:58  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 47.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.9   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912914-16  
**Client ID:** 504226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 10:02  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 51.0   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912914-17  
**Client ID:** 504311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 11:14  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.00   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.80   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.0   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 22.0   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 37.8   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 10.2   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912914-18  
**Client ID:** 504312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 11:14  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.10   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 18.7   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 21.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 30.5   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912914-19  
**Client ID:** 504313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 11:14  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.40   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.1   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.8   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 23.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.5   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.3   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



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**Project Number:** TO-0018

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**SAMPLE RESULTS**

**Lab ID:** L0912914-20  
**Client ID:** 504326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 11:18  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.60   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.40   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.9   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 21.6   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 25.4   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.30   |           | %     | 0.100 | --  | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |

## Lab Duplicate Analysis

Batch Quality Control

Project Name: NBH LONG TERM MONITORING

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Lab Number: L0912914

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| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG383815-1 QC Sample: L0912914-20 Client ID: 504326 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 2.6           | 1.70             | %     | 42  | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 1.7           | 1.10             | %     | 43  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 2.7           | 0.700            | %     | 118 | Q    | 20         |
| Medium Sand (0.25-0.50 mm)   | 9.4           | 7.80             | %     | 19  |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 21.9          | 21.8             | %     | 0   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 21.6          | 23.0             | %     | 6   |      | 20         |
| Silt - (1.95-62.5 um)  | 25.4          | 29.9             | %     | 16  |      | 20         |
| Clay - (<1.95 um)  | 6.3           | 8.20             | %     | 26  | Q    | 20         |

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## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

## Cooler Information Custody Seal

## Cooler

|   |        |
|---|--------|
| D | Absent |
| E | Absent |
| B | Absent |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-01A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-02A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-03A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-04A | Glass 250ml unpreserved | B      | N/A | 2.7        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-05A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Project Number:** TO-0018

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-06A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-07A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-08A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-09A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-10A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-11A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-12A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-13A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-14A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-15A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

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Lab Number: L0912914

Report Date: 08/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-16A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-17A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-18A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912914-19A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912914

Report Date: 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912914-20A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NI** - Not Ignitable.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

*Data Qualifiers*

- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912914  
**Report Date:** 08/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# ASTM D422-63

## Wet Sieve Hydrometer



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912914  
**Location:** 503911  
**Sample Number:** L0912914-01  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 23.63  
 Tare Wt. = 4.83  
 Minus #200 from wash = 50.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 37.70                       | 0.00         | #4                 | 522.06                  | 521.77               | 99.2          | 0.8              |
|                             |              | #10                | 485.60                  | 484.81               | 97.1          | 2.9              |
|                             |              | #20                | 408.83                  | 405.42               | 88.1          | 11.9             |
|                             |              | #40                | 366.40                  | 362.75               | 78.4          | 21.6             |
|                             |              | #60                | 370.04                  | 366.16               | 68.1          | 31.9             |
|                             |              | #140               | 348.12                  | 342.82               | 54.1          | 45.9             |
|                             |              | #200               | 346.15                  | 345.25               | 51.7          | 48.3             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 51.7  
 Weight of hydrometer sample = 37.70  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 25.0          | 75.0             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 22.8          | 77.2             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 20.6          | 79.4             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 18.4          | 81.6             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 18.4          | 81.6             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 16.2          | 83.8             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 16.2          | 83.8             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 7.3     | 9.1  | 12.6 | 11.3 | 11.5    | 51.8  | 20.9 | 3.0  | 3.0  | 1.6     | 28.5  | 16.8 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0118 | 0.0404 | 0.0715 | 0.1523 | 0.4763 | 0.6813 | 1.0183 | 1.6342 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.97                    |



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912914

Location: 503912

Sample Number: L0912914-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 11.73  
 Tare Wt. = 4.64  
 Minus #200 from wash = 84.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.24                       | 0.00         | #4                 | 521.14                  | 520.81               | 99.3          | 0.7              |
|                             |              | #10                | 483.09                  | 482.11               | 97.1          | 2.9              |
|                             |              | #20                | 411.92                  | 411.09               | 95.3          | 4.7              |
|                             |              | #40                | 378.58                  | 377.86               | 93.7          | 6.3              |
|                             |              | #60                | 370.84                  | 369.84               | 91.5          | 8.5              |
|                             |              | #140               | 349.38                  | 347.17               | 86.6          | 13.4             |
|                             |              | #200               | 347.57                  | 346.51               | 84.2          | 15.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 84.2

Weight of hydrometer sample = 45.24

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 37.0          | 63.0             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 34.0          | 66.0             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 28.0          | 72.0             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 25.0          | 75.0             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 22.0          | 78.0             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 22.0          | 78.0             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 22.0          | 78.0             |

## Fractional Components

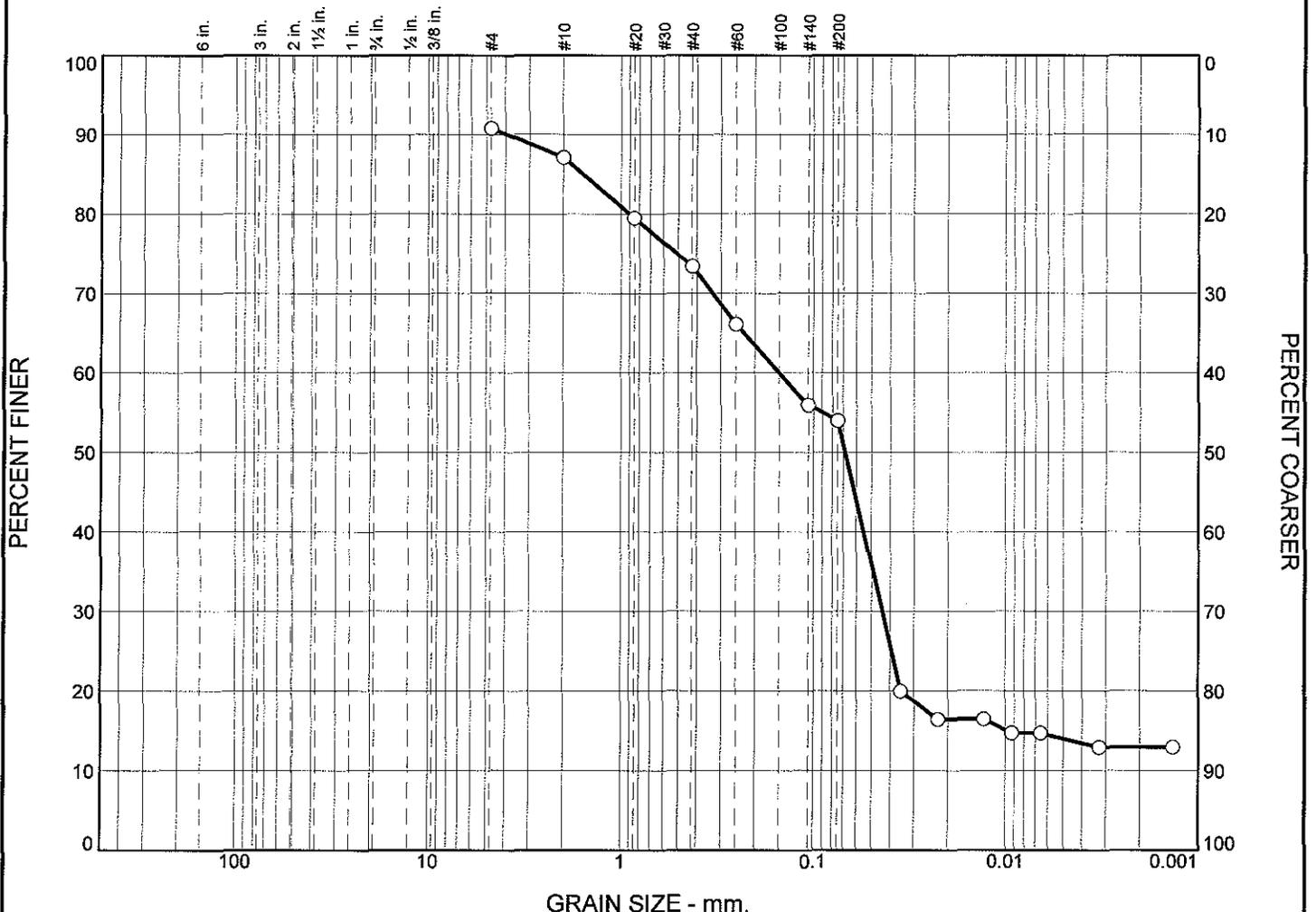
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 1.5     | 1.5  | 2.6  | 4.0  | 14.4    | 24.0  | 36.9 | 6.1  | 6.6  | 1.5     | 51.1  | 22.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0155          | 0.0429          | 0.0505          | 0.0700          | 0.0839          | 0.1932          | 0.7558          |

| Fineness Modulus |
|------------------|
| 0.32             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 3.0        | 6.2     | 6.1  | 8.7  | 8.2  | 12.1    | 26.8   | 2.6  | 1.7  | 1.3     | 13.4   |

| X | LL | PL | D85    | D60    | D50    | D30    | D15    | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|--------|--------|-----|----|----|
| ○ |    |    | 1.5791 | 0.1494 | 0.0687 | 0.0439 | 0.0099 |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912914    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
**Source of Sample:** 503913    **Sample Number:** L0912914-03  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
**Figure**

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 503913  
 Sample Number: L0912914-03  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 28.66  
 Tare Wt. = 5.01  
 Minus #200 from wash = 52.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 49.37                       | 0.00         | #4                 | 526.31                  | 521.77               | 90.8          | 9.2              |
|                             |              | #10                | 486.64                  | 484.81               | 87.1          | 12.9             |
|                             |              | #20                | 409.17                  | 405.42               | 79.5          | 20.5             |
|                             |              | #40                | 365.75                  | 362.74               | 73.4          | 26.6             |
|                             |              | #60                | 369.77                  | 366.16               | 66.1          | 33.9             |
|                             |              | #140               | 347.83                  | 342.82               | 55.9          | 44.1             |
|                             |              | #200               | 346.24                  | 345.25               | 53.9          | 46.1             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 53.9  
 Weight of hydrometer sample = 49.37  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 20.0          | 80.0             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 16.4          | 83.6             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 16.4          | 83.6             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 14.7          | 85.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 14.7          | 85.3             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 12.9          | 87.1             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 12.9          | 87.1             |

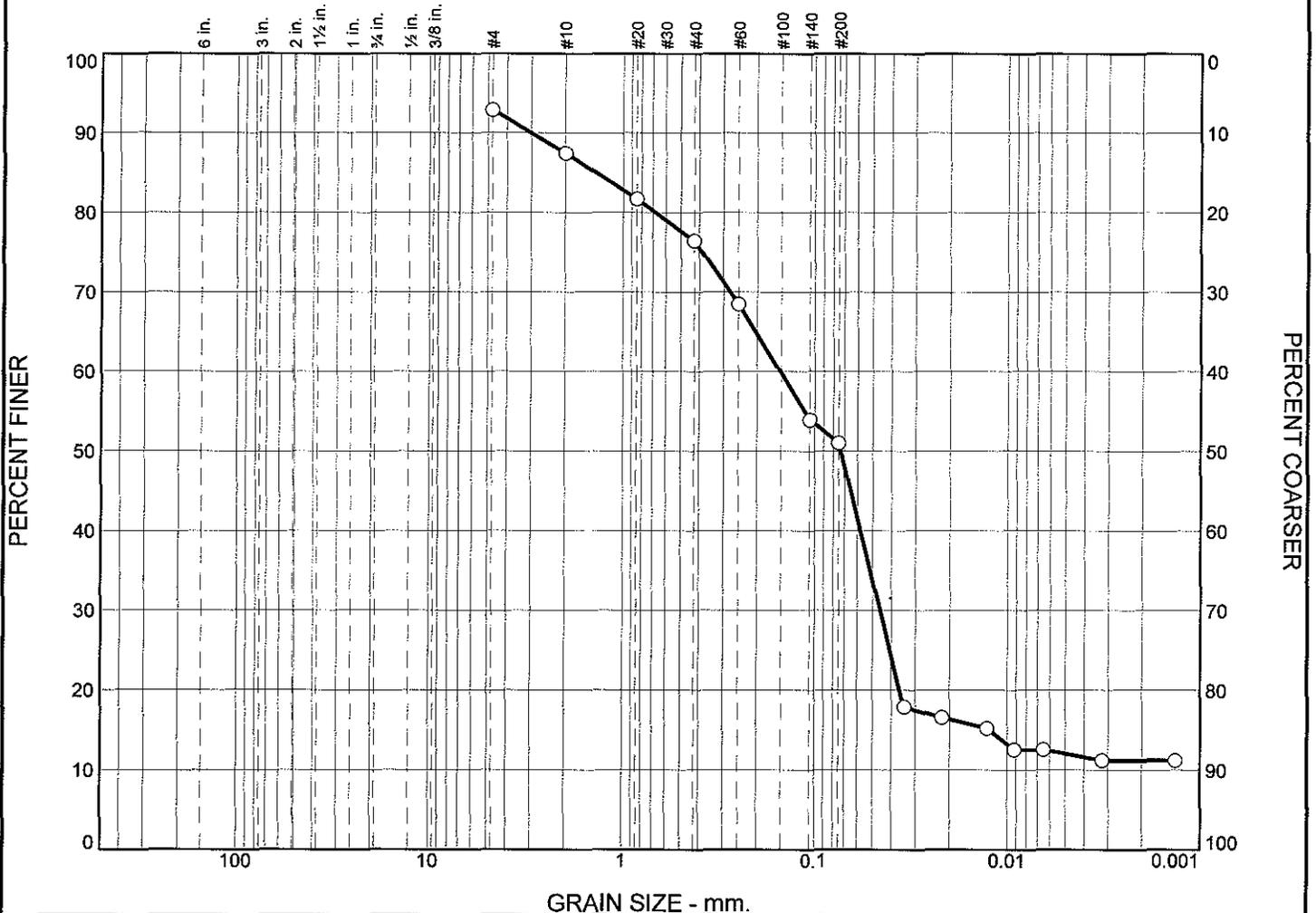
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.0      | 6.2     | 6.1  | 8.7  | 8.2  | 12.1    | 41.3  | 26.8 | 2.6  | 1.7  | 1.3     | 32.4  | 13.4 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|-----|
|     | 0.0099 | 0.0351 | 0.0439 | 0.0687 | 0.1494 | 0.8991 | 1.5791 | 3.9373 |     |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 1.34                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      | % Silt  |      |      |      | % Clay |         |
|---|------------|-----------|-----------|------------|---------|--------|--------|------|---------|------|------|------|--------|---------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○ |            |           |           | 4.4        | 4.6     | 5.1    | 9.2    | 11.8 | 13.4    | 25.7 | 1.9  | 3.2  | 0.9    | 11.6    |
| X | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  | Cc      | Cu   |      |      |        |         |
| ○ |            |           | 1.3887    | 0.1518     | 0.0732  | 0.0457 | 0.0125 |      |         |      |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 503926    <b>Sample Number:</b> L0912914-04</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 503926  
 Sample Number: L0912914-04  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.98  
 Tare Wt. = 4.82  
 Minus #200 from wash = 50.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 61.27                       | 0.00         | #4                 | 525.17                  | 520.81               | 92.9          | 7.1              |
|                             |              | #10                | 485.44                  | 482.11               | 87.4          | 12.6             |
|                             |              | #20                | 414.61                  | 411.09               | 81.7          | 18.3             |
|                             |              | #40                | 381.09                  | 377.86               | 76.4          | 23.6             |
|                             |              | #60                | 374.73                  | 369.84               | 68.5          | 31.5             |
|                             |              | #140               | 356.07                  | 347.17               | 53.9          | 46.1             |
|                             |              | #200               | 348.30                  | 346.51               | 51.0          | 49.0             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 51.0  
 Weight of hydrometer sample = 61.27  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 17.9          | 82.1             |
| 5.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0219         | 16.5          | 83.5             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 15.2          | 84.8             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 12.5          | 87.5             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 12.5          | 87.5             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 11.2          | 88.8             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 11.2          | 88.8             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.4      | 4.6     | 5.1  | 9.2  | 11.8 | 13.4    | 44.1  | 25.7 | 1.9  | 3.2  | 0.9     | 31.7  | 11.6 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|-----|
|     | 0.0125 | 0.0361 | 0.0457 | 0.0732 | 0.1518 | 0.6794 | 1.3887 | 3.0016 |     |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 1.25                    |



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504011  
 Sample Number: L0912914-05  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 12.65  
 Tare Wt. = 4.60  
 Minus #200 from wash = 74.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 31.55                       | 0.00         | #4                 | 521.78                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 484.92                  | 484.81               | 99.6          | 0.4              |
|                             |              | #20                | 405.97                  | 405.42               | 97.9          | 2.1              |
|                             |              | #40                | 362.80                  | 362.74               | 97.7          | 2.3              |
|                             |              | #60                | 367.75                  | 366.16               | 92.6          | 7.4              |
|                             |              | #140               | 346.56                  | 342.82               | 80.8          | 19.2             |
|                             |              | #200               | 346.55                  | 345.25               | 76.7          | 23.3             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 76.7  
 Weight of hydrometer sample = 31.55  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 48.3          | 51.7             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 44.4          | 55.6             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 36.6          | 63.4             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 36.6          | 63.4             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 32.7          | 67.3             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 28.8          | 71.2             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 28.8          | 71.2             |

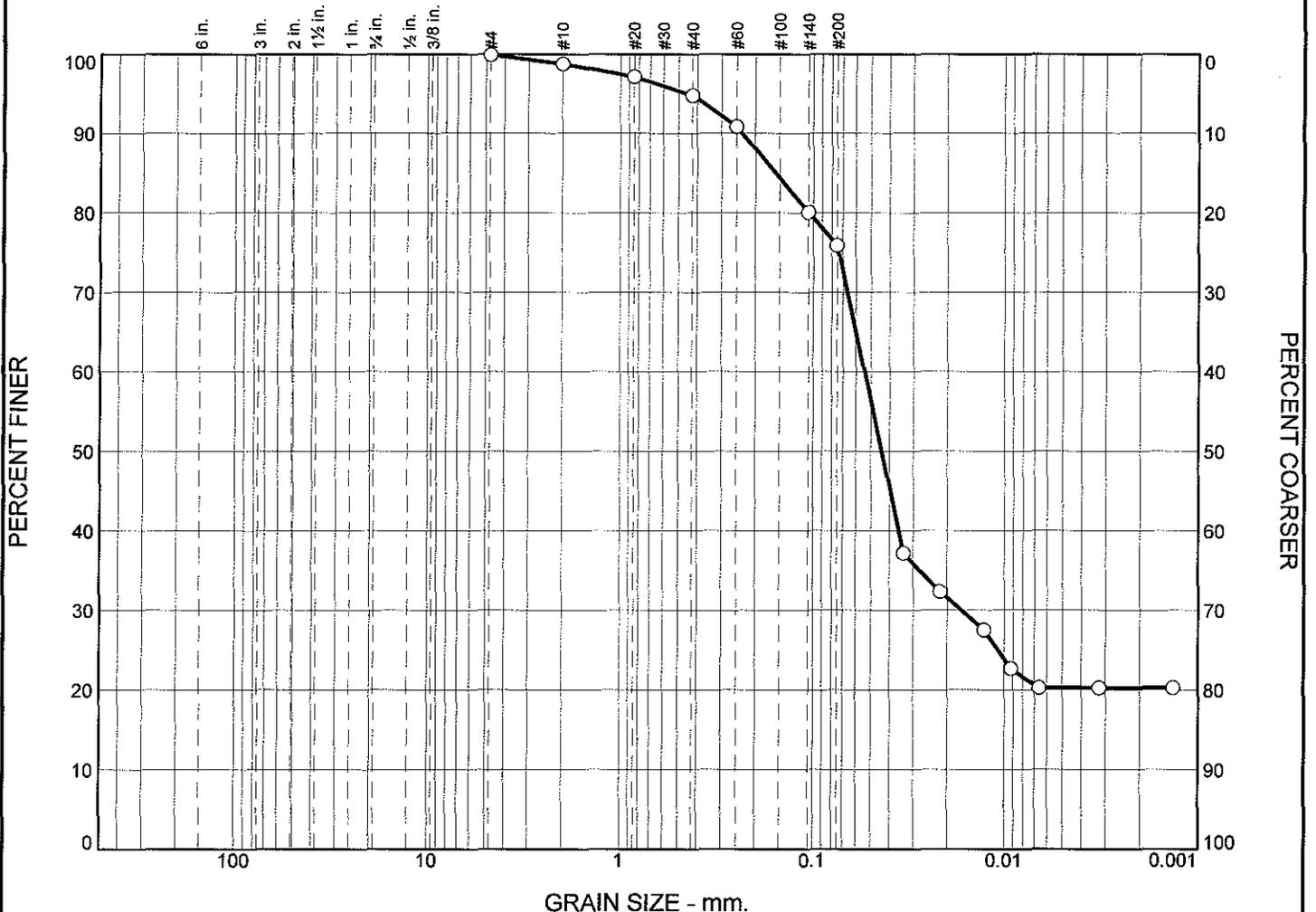
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 1.4     | 0.5  | 5.1  | 9.5  | 13.1    | 29.6  | 22.7 | 8.1  | 4.5  | 4.9     | 40.2  | 29.8 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0041 | 0.0364 | 0.0477 | 0.0992 | 0.1437 | 0.2064 | 0.3203 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.24                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |          |   |         |   |         |   |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |   |         |   |         |   | 0.9      | 1.3     | 2.2  | 4.5  | 8.7  | 15.0    | 30.8   | 7.0  | 7.8  | 1.3     | 20.2   |

| × | LL | PL | D85    | D60    | D50    | D30    | D15 | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|--------|-----|-----|----|----|
| ○ |    |    | 0.1571 | 0.0540 | 0.0439 | 0.0168 |     |     |    |    |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504012    <b>Sample Number:</b> L0912914-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912914

Location: 504012

Sample Number: L0912914-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 16.90  
 Tare Wt. = 4.65  
 Minus #200 from wash = 75.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.39                       | 0.00         | #4                 | 520.86                  | 520.81               | 99.9          | 0.1              |
|                             |              | #10                | 482.67                  | 482.11               | 98.8          | 1.2              |
|                             |              | #20                | 411.92                  | 411.09               | 97.1          | 2.9              |
|                             |              | #40                | 379.04                  | 377.86               | 94.8          | 5.2              |
|                             |              | #60                | 371.84                  | 369.84               | 90.8          | 9.2              |
|                             |              | #140               | 352.60                  | 347.17               | 80.1          | 19.9             |
|                             |              | #200               | 348.61                  | 346.51               | 75.9          | 24.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 75.9

Weight of hydrometer sample = 50.39

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0150         | 1.0154            | 0.0132 | 12.0 | 13.1       | 0.0337         | 37.2          | 62.8             |
| 5.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0217         | 32.3          | 67.7             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 27.5          | 72.5             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 22.7          | 77.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0066         | 20.2          | 79.8             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 20.2          | 79.8             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 20.2          | 79.8             |

## Fractional Components

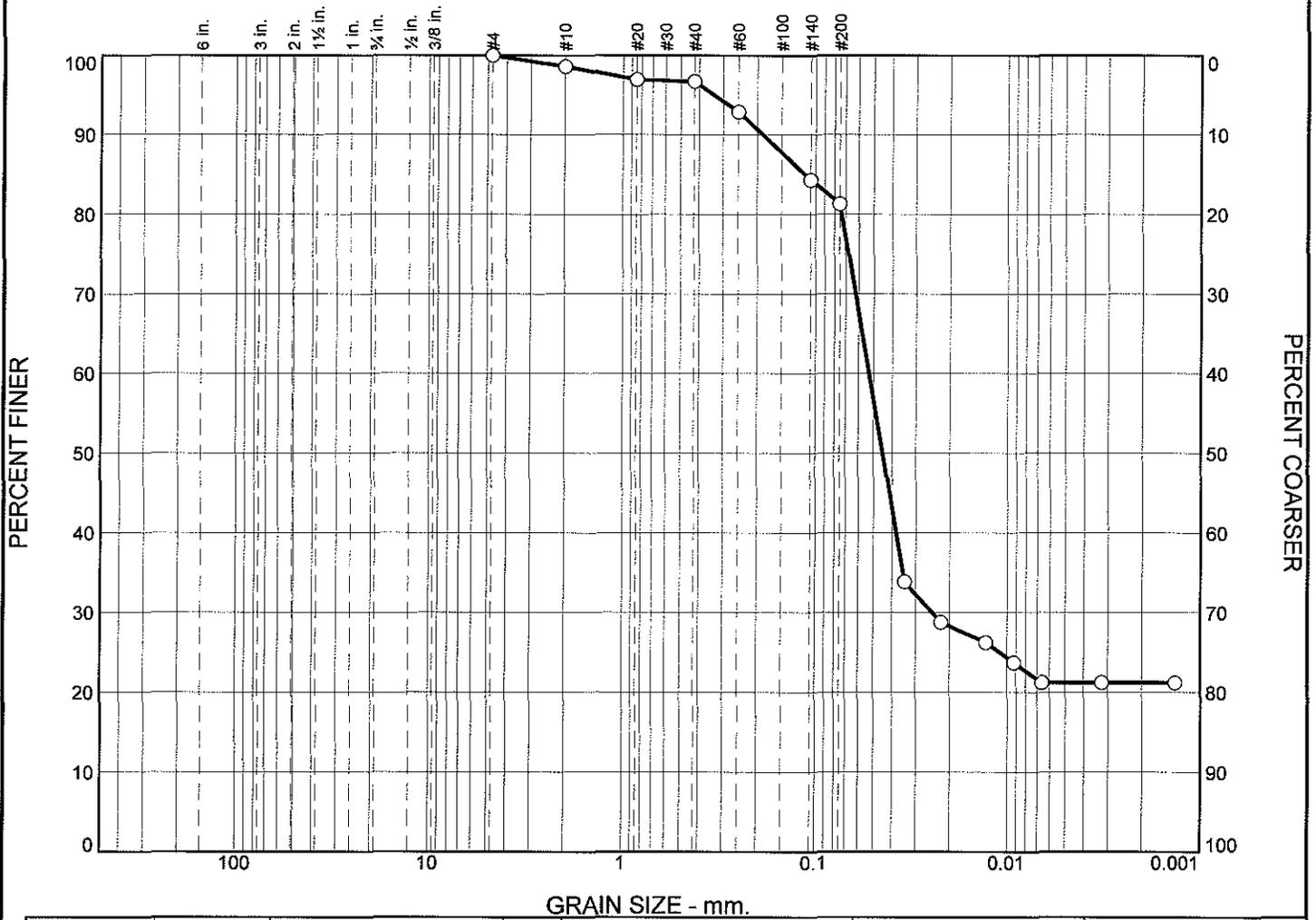
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 1.3     | 2.2  | 4.5  | 8.7  | 15.0    | 31.7  | 30.8 | 7.0  | 7.8  | 1.3     | 46.9  | 20.2 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0168          | 0.0439          | 0.0540          | 0.1055          | 0.1571          | 0.2340          | 0.4508          |

Fineness Modulus

0.31

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 1.1        | 1.3     | 0.5  | 3.9  | 6.9  | 15.8    | 37.6   | 5.5  | 4.6  | 1.3     | 21.2   |

| LL | PL | D85    | D60    | D50    | D30    | D15 | D10 | Cc | Cu |
|----|----|--------|--------|--------|--------|-----|-----|----|----|
| ○  |    | 0.1134 | 0.0528 | 0.0448 | 0.0246 |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912914 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 504013 <b>Sample Number:</b> L0912914-07 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912914

Location: 504013

Sample Number: L0912914-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.12  
 Tare Wt. = 4.58  
 Minus #200 from wash = 79.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.61                       | 0.00         | #4                 | 521.78                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.52                  | 484.81               | 98.6          | 1.4              |
|                             |              | #20                | 406.28                  | 405.42               | 96.9          | 3.1              |
|                             |              | #40                | 362.86                  | 362.74               | 96.7          | 3.3              |
|                             |              | #60                | 368.13                  | 366.16               | 92.9          | 7.1              |
|                             |              | #140               | 347.24                  | 342.82               | 84.3          | 15.7             |
|                             |              | #200               | 346.80                  | 345.25               | 81.3          | 18.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 81.3

Weight of hydrometer sample = 51.61

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 33.8          | 66.2             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0222         | 28.8          | 71.2             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0129         | 26.2          | 73.8             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 23.7          | 76.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0066         | 21.2          | 78.8             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 21.2          | 78.8             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 21.2          | 78.8             |

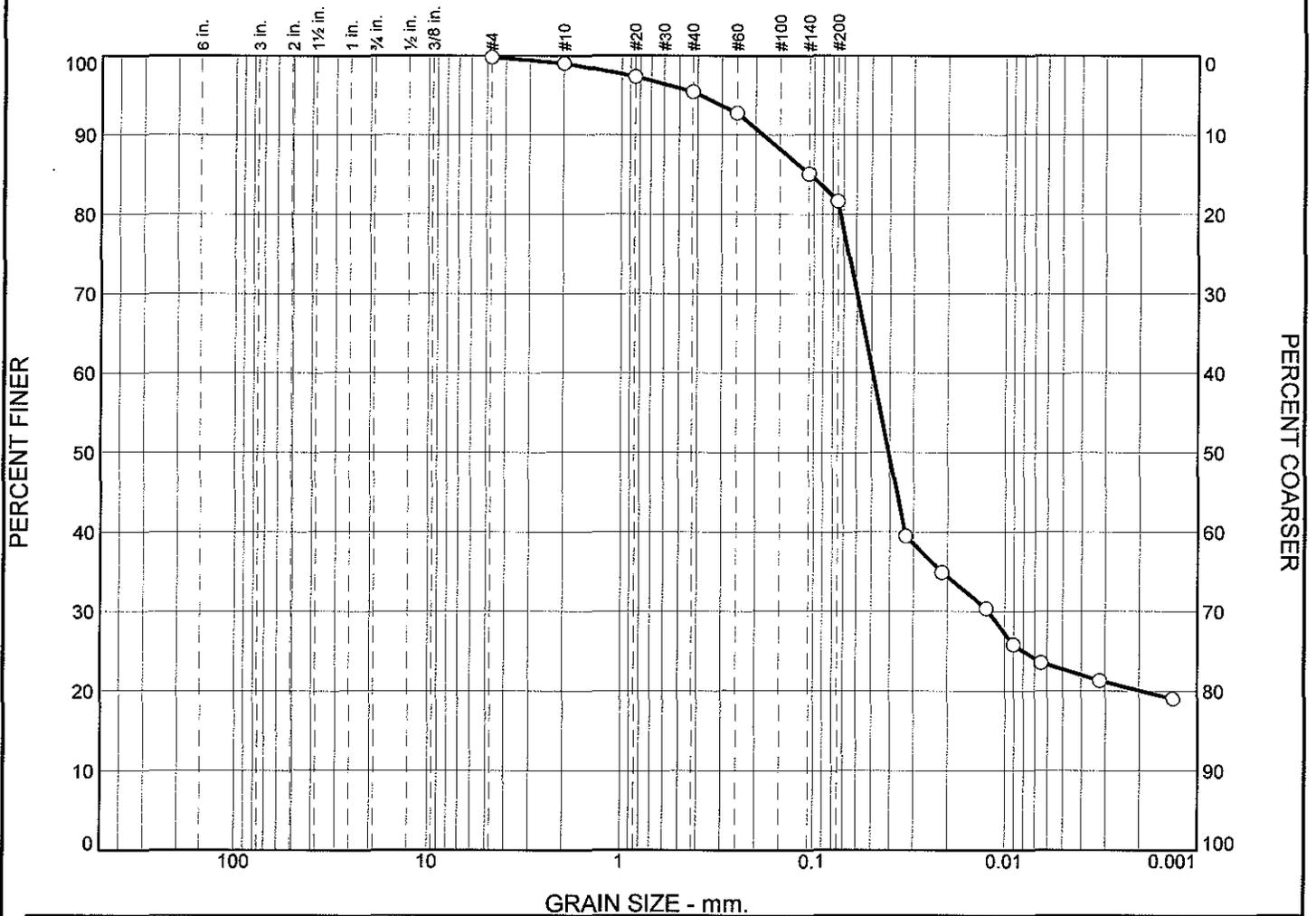
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.1      | 1.3     | 0.5  | 3.9  | 6.9  | 15.8    | 28.4  | 37.6 | 5.5  | 4.6  | 1.3     | 49.0  | 21.2 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0246 | 0.0448 | 0.0528 | 0.0734 | 0.1134 | 0.1872 | 0.3353 |

| Fineness Modulus |
|------------------|
| 0.25             |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
|            |           |           | 0.7        | 1.3     | 1.8  | 3.1  | 6.2  | 14.3    | 33.5   | 6.6  | 7.4  | 2.9     | 21.9   |

| LL | PL | D85    | D60    | D50    | D30    | D15 | D10 | Cc | Cu |
|----|----|--------|--------|--------|--------|-----|-----|----|----|
|    |    | 0.1046 | 0.0492 | 0.0405 | 0.0122 |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
|                      |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912914 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 504026 <b>Sample Number:</b> L0912914-08 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912914

Location: 504026

Sample Number: L0912914-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 15.58  
 Tare Wt. = 4.68  
 Minus #200 from wash = 81.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 57.70                       | 0.00         | #4                 | 520.92                  | 520.81               | 99.8          | 0.2              |
|                             |              | #10                | 482.55                  | 482.11               | 99.0          | 1.0              |
|                             |              | #20                | 412.07                  | 411.09               | 97.3          | 2.7              |
|                             |              | #40                | 378.96                  | 377.86               | 95.4          | 4.6              |
|                             |              | #60                | 371.38                  | 369.84               | 92.8          | 7.2              |
|                             |              | #140               | 351.58                  | 347.17               | 85.1          | 14.9             |
|                             |              | #200               | 348.53                  | 346.51               | 81.6          | 18.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 81.6

Weight of hydrometer sample = 57.70

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times Rm$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0170         | 1.0174            | 0.0132 | 14.0 | 12.6       | 0.0330         | 39.5          | 60.5             |
| 5.00                | 23.0            | 1.0150         | 1.0154            | 0.0132 | 12.0 | 13.1       | 0.0213         | 34.9          | 65.1             |
| 15.00               | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0125         | 30.4          | 69.6             |
| 30.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0090         | 25.8          | 74.2             |
| 60.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0065         | 23.6          | 76.4             |
| 250.00              | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0032         | 21.3          | 78.7             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 19.0          | 81.0             |

## Fractional Components

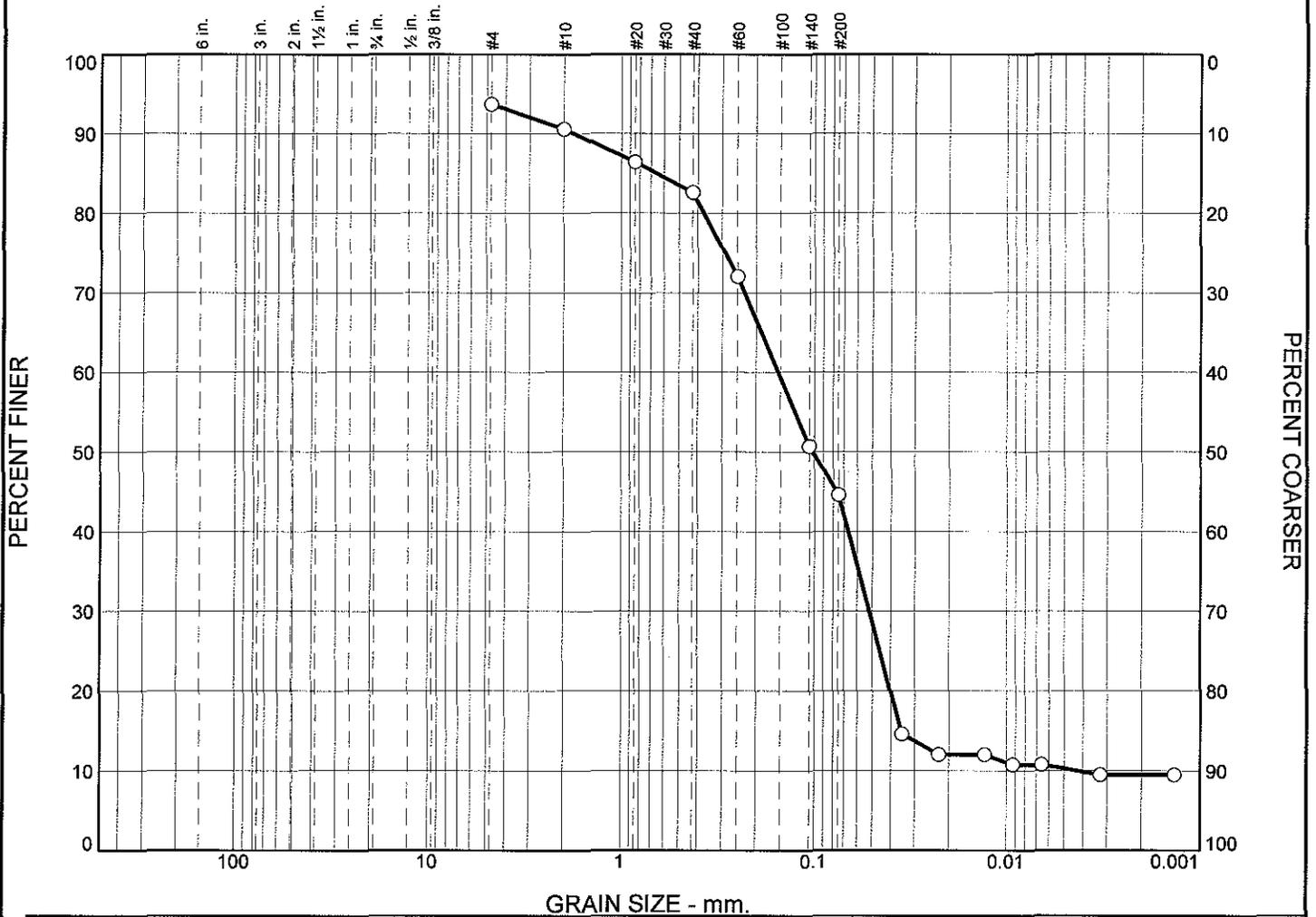
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.7      | 1.3     | 1.8  | 3.1  | 6.2  | 14.3    | 26.7  | 33.5 | 6.6  | 7.4  | 2.9     | 50.4  | 21.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0019          | 0.0122          | 0.0405          | 0.0492          | 0.0727          | 0.1046          | 0.1831          | 0.3893          |

| Fineness Modulus |
|------------------|
| 0.25             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | % Sand   |         |      |      |      | % Silt  |      |      |      | %   | Clay |         |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|------|------|------|-----|------|---------|
|   |          |   |         |   |         |   | Granules | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |     |      | V. Fine |
| ○ |          |   |         |   |         |   | 2.5      | 3.4     | 3.7  | 11.4 | 17.3 | 17.4    | 23.5 | 1.9  | 1.3  | 0.9 |      | 9.8     |

| ⊗ | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.6566          | 0.1540          | 0.1019          | 0.0518          | 0.0354          | 0.0044          | 3.99           | 35.29          |

| ○ | Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|---|----------------------|--|--|--|--|--|--|--|------|--------|
|   |                      |  |  |  |  |  |  |  |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912914 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 504111 <b>Sample Number:</b> L0912914-09 | <b>Remarks:</b><br><br><br> |
|--|-----------------------------|

|   |               |
|---|---------------|
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b> | <b>Figure</b> |
|---|---------------|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912914

Location: 504111

Sample Number: L0912914-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.19

Tare Wt. = 5.03

Minus #200 from wash = 40.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.78                       | 0.00         | #4                 | 525.28                  | 521.77               | 93.7          | 6.3              |
|                             |              | #10                | 486.55                  | 484.81               | 90.6          | 9.4              |
|                             |              | #20                | 407.74                  | 405.42               | 86.4          | 13.6             |
|                             |              | #40                | 364.88                  | 362.74               | 82.6          | 17.4             |
|                             |              | #60                | 372.03                  | 366.16               | 72.1          | 27.9             |
|                             |              | #140               | 354.74                  | 342.82               | 50.7          | 49.3             |
|                             |              | #200               | 348.66                  | 345.25               | 44.6          | 55.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 44.6

Weight of hydrometer sample = 55.78

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 14.6          | 85.4             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 12.0          | 88.0             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 12.0          | 88.0             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 10.7          | 89.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 10.7          | 89.3             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 9.5           | 90.5             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 9.5           | 90.5             |

## Fractional Components

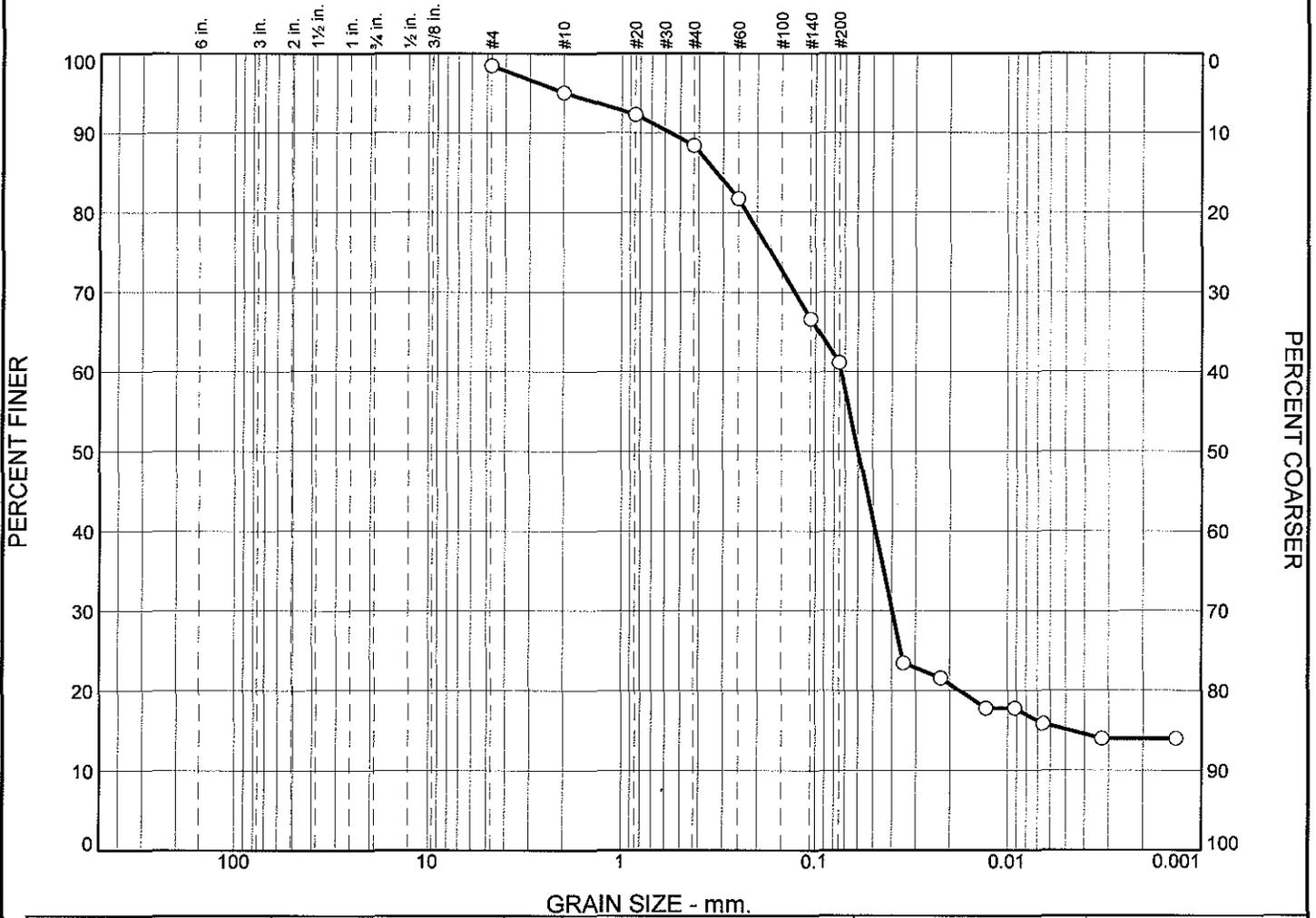
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.5      | 3.4     | 3.7  | 11.4 | 17.3 | 17.4    | 53.2  | 23.5 | 1.9  | 1.3  | 0.9     | 27.6  | 9.8  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 0.0044 | 0.0354 | 0.0402 | 0.0518 | 0.1019 | 0.1540 | 0.3729 | 0.6566 | 1.7721 |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.08             | 35.29          | 3.99           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |      |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |      |
| ○          |           |           |            | 2.7     | 2.3  | 3.5  | 7.6  | 12.2    | 17.3   | 29.2 | 3.9  | 2.3     | 2.3    | 14.5 |

| LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○  |    | 0.3237          | 0.0733          | 0.0597          | 0.0397          | 0.0048          |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912914 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 504112 <b>Sample Number:</b> L0912914-10 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504112  
 Sample Number: L0912914-10  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 25.33  
 Tare Wt. = 4.68  
 Minus #200 from wash = 60.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.77                       | 0.00         | #4                 | 521.61                  | 520.81               | 98.5          | 1.5              |
|                             |              | #10                | 483.87                  | 482.11               | 95.1          | 4.9              |
|                             |              | #20                | 412.52                  | 411.09               | 92.3          | 7.7              |
|                             |              | #40                | 379.86                  | 377.86               | 88.4          | 11.6             |
|                             |              | #60                | 373.30                  | 369.84               | 81.7          | 18.3             |
|                             |              | #140               | 355.01                  | 347.17               | 66.6          | 33.4             |
|                             |              | #200               | 349.35                  | 346.51               | 61.1          | 38.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 61.1  
 Weight of hydrometer sample = 51.77  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 23.5          | 76.5             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 21.6          | 78.4             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 17.8          | 82.2             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 17.8          | 82.2             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 15.9          | 84.1             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 14.0          | 86.0             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 14.0          | 86.0             |

## Fractional Components

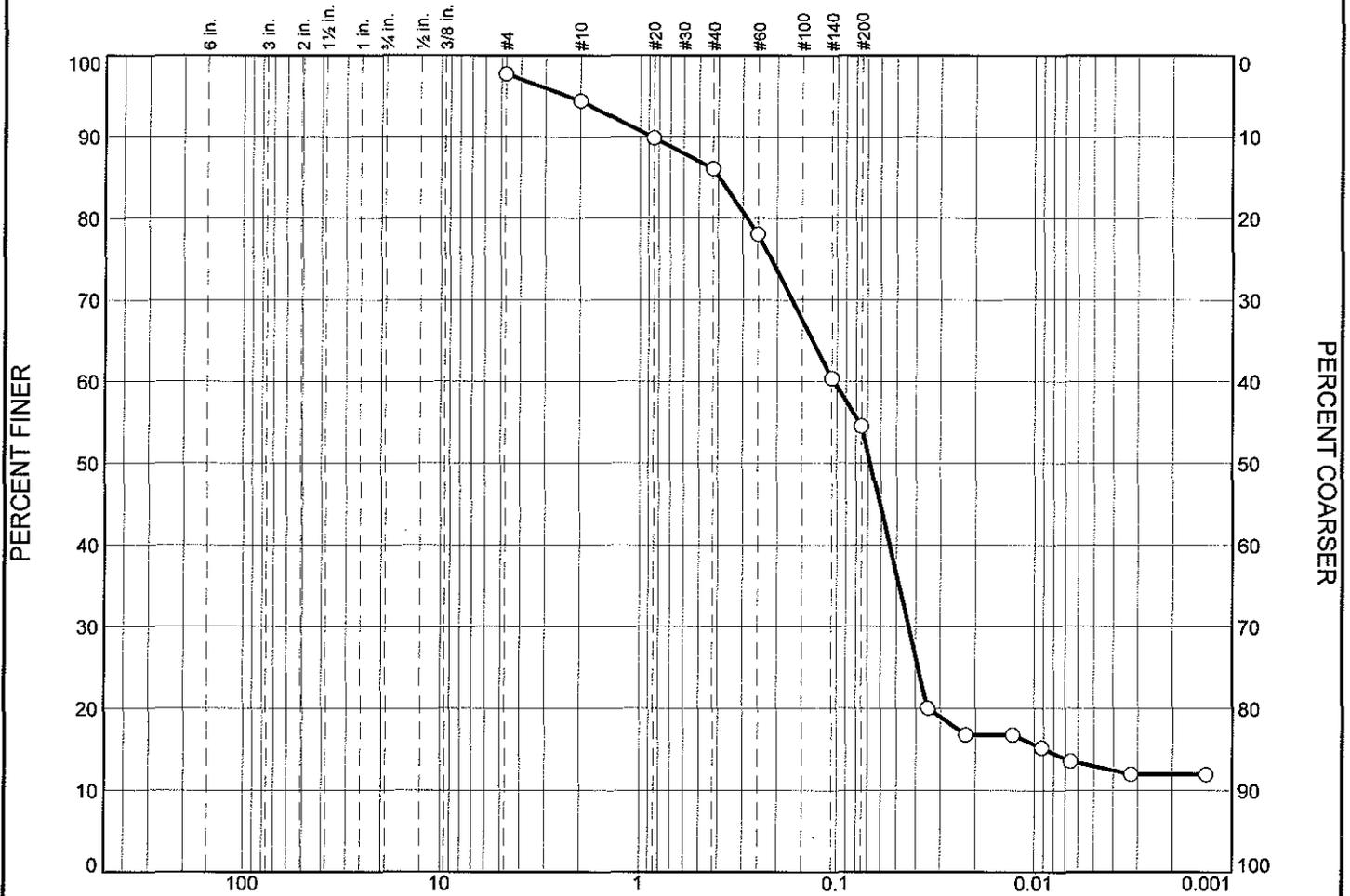
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.7      | 2.3     | 3.5  | 7.6  | 12.2 | 17.3    | 42.9  | 29.2 | 3.9  | 2.3  | 2.3     | 37.7  | 14.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0048          | 0.0178          | 0.0397          | 0.0597          | 0.0733          | 0.2265          | 0.3237          | 0.5633          | 1.9662          |

|                  |
|------------------|
| Fineness Modulus |
| 0.65             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○          |           |           | 2.6        | 3.7     | 3.7  | 8.9  | 14.3 | 17.4    | 27.2   | 2.4  | 2.4  | 2.1     | 12.3   |

| LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○  |    | 0.3952          | 0.1036          | 0.0678          | 0.0434          | 0.0089          |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504113    <b>Sample Number:</b> L0912914-11</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912914  
**Location:** 504113  
**Sample Number:** L0912914-11  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 30.61  
 Tare Wt. = 4.80  
 Minus #200 from wash = 52.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 54.11                       | 0.00         | #4                 | 523.02                  | 521.77               | 97.7          | 2.3              |
|                             |              | #10                | 486.59                  | 484.81               | 94.4          | 5.6              |
|                             |              | #20                | 407.90                  | 405.42               | 89.8          | 10.2             |
|                             |              | #40                | 364.75                  | 362.74               | 86.1          | 13.9             |
|                             |              | #60                | 370.51                  | 366.16               | 78.1          | 21.9             |
|                             |              | #140               | 352.38                  | 342.82               | 60.4          | 39.6             |
|                             |              | #200               | 348.43                  | 345.25               | 54.5          | 45.5             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 54.5  
 Weight of hydrometer sample = 54.11  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 20.0          | 80.0             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 16.8          | 83.2             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0129         | 16.8          | 83.2             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 15.2          | 84.8             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 13.5          | 86.5             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 11.9          | 88.1             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 11.9          | 88.1             |

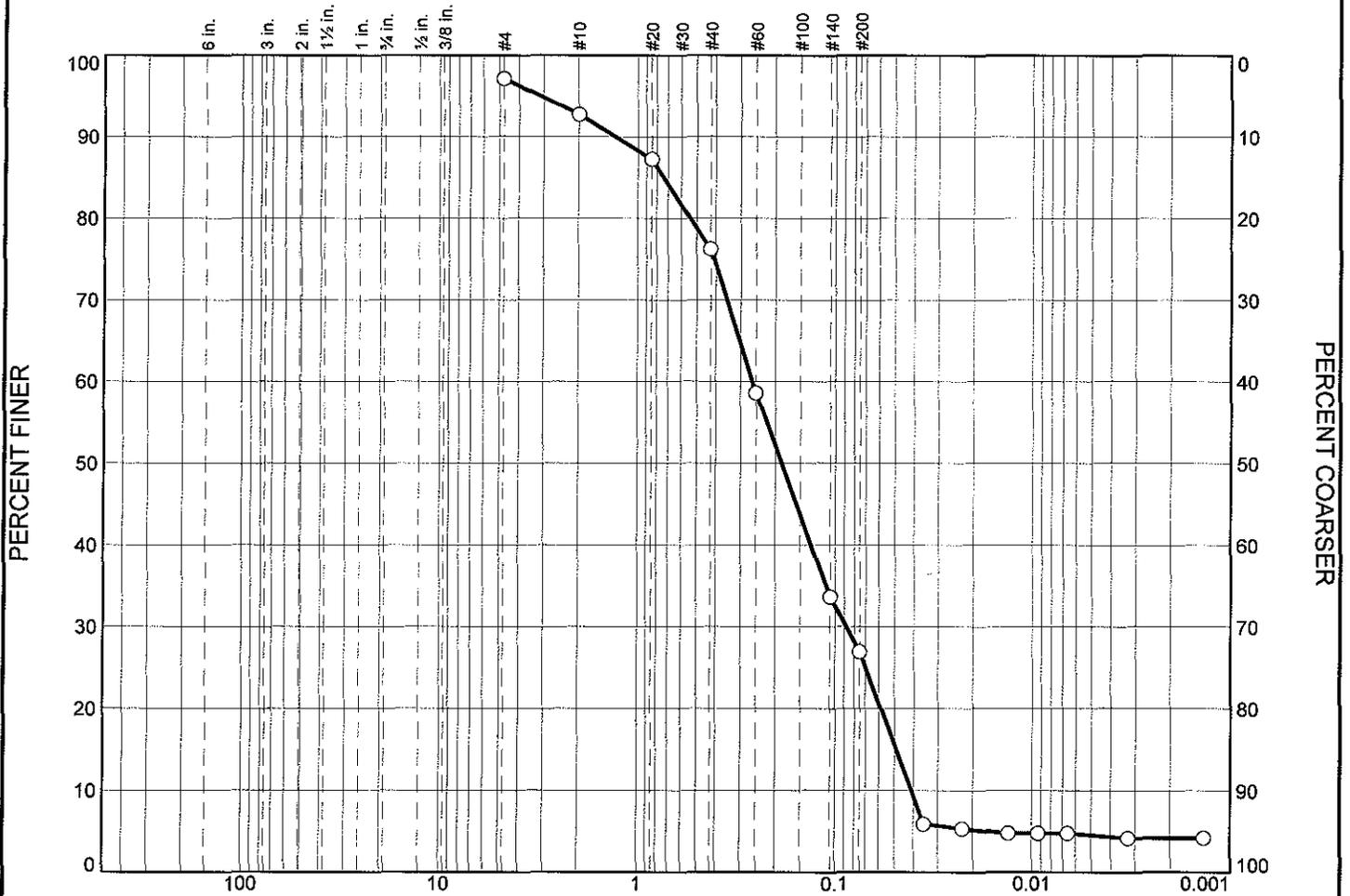
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.6      | 3.7     | 3.7  | 8.9  | 14.3 | 17.4    | 48.0  | 27.2 | 2.4  | 2.4  | 2.1     | 34.1  | 12.3 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0089 | 0.0346 | 0.0434 | 0.0678 | 0.1036 | 0.2841 | 0.3952 | 0.8795 | 2.3416 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.79                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 3.6      | 4.4     | 9.5  | 20.2 | 20.1 | 16.7    | 16.1 | 0.8  | 0.1  | 0.5     | 4.3  |

| × | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|---|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○ |    |    | 0.7380 | 0.2607 | 0.1859 | 0.0878 | 0.0490 | 0.0409 | 0.72 | 6.37 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504126    <b>Sample Number:</b> L0912914-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504126  
 Sample Number: L0912914-12  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 61.30  
 Tare Wt. = 4.70  
 Minus #200 from wash = 25.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 76.15                       | 0.00         | #4                 | 522.98                  | 520.81               | 97.2          | 2.8              |
|                             |              | #10                | 485.47                  | 482.11               | 92.7          | 7.3              |
|                             |              | #20                | 415.27                  | 411.09               | 87.2          | 12.8             |
|                             |              | #40                | 386.26                  | 377.86               | 76.2          | 23.8             |
|                             |              | #60                | 383.25                  | 369.84               | 58.6          | 41.4             |
|                             |              | #140               | 366.15                  | 347.17               | 33.7          | 66.3             |
|                             |              | #200               | 351.66                  | 346.51               | 26.9          | 73.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 26.9  
 Weight of hydrometer sample = 76.15  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0353         | 5.9           | 94.1             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 5.3           | 94.7             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 4.8           | 95.2             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 4.8           | 95.2             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 4.8           | 95.2             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 4.2           | 95.8             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 4.2           | 95.8             |

## Fractional Components

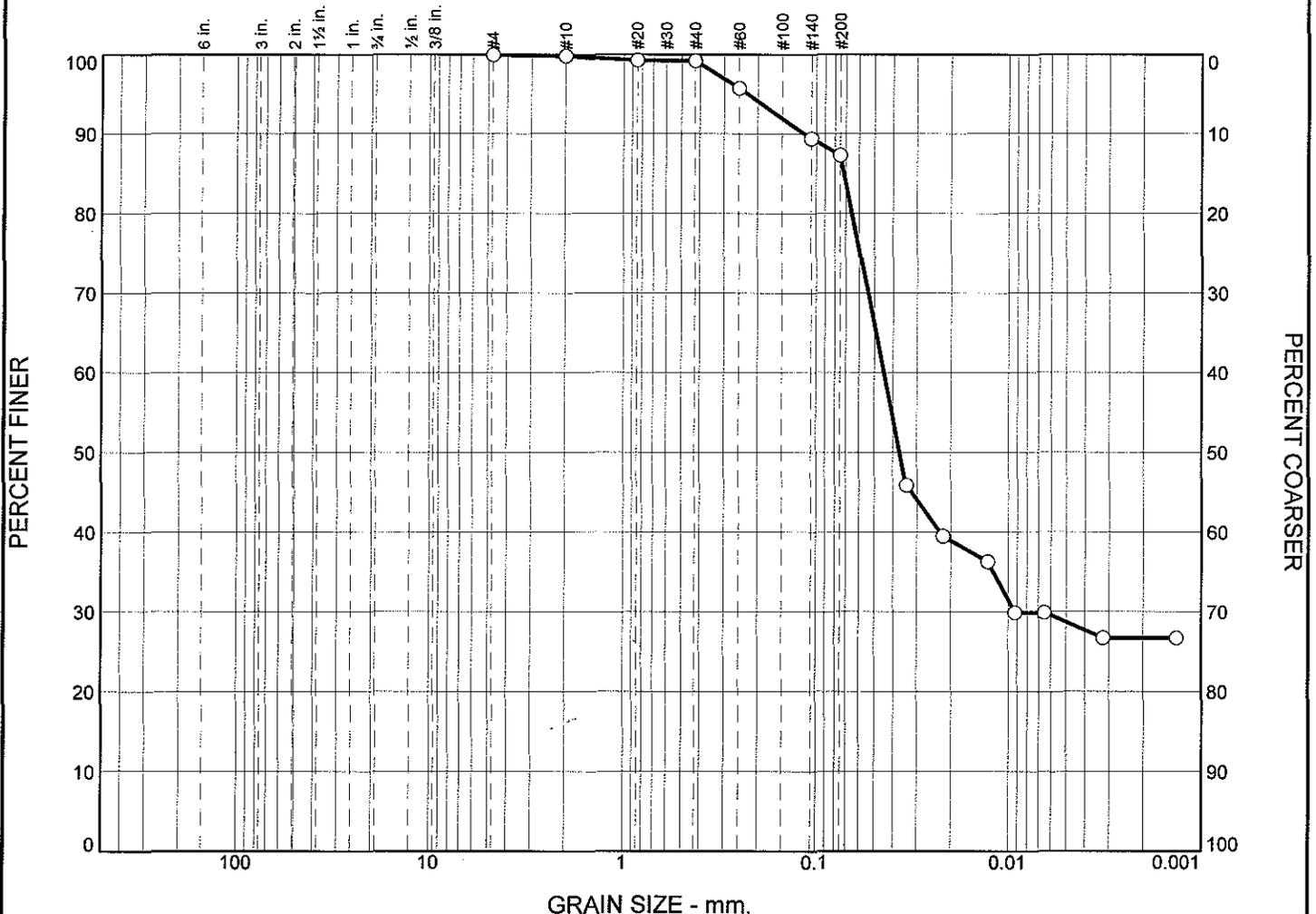
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.6      | 4.4     | 9.5  | 20.2 | 20.1 | 16.7    | 70.9  | 16.1 | 0.8  | 0.1  | 0.5     | 17.5  | 4.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0409          | 0.0490          | 0.0586          | 0.0878          | 0.1859          | 0.2607          | 0.5390          | 0.7380          | 1.3052          | 3.1161          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.30             | 6.37           | 0.72           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Sand     |         |      |      |      | Silt    |      |      | %   | Clay |      |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|------|------|-----|------|------|
|   |          |   |         |   |         |   | Granules | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. |     |      | Fine |
| ○ |          |   |         |   |         |   | 0.1      | 0.4     | 0.2  | 3.5  | 5.1  | 12.9    | 33.2 | 7.0  | 7.6 | 2.3  | 27.6 |

| × | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.0718          | 0.0446          | 0.0368          | 0.0093          |                 |                 |                |                |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504211    <b>Sample Number:</b> L0912914-13</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912914  
**Location:** 504211  
**Sample Number:** L0912914-13  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 10.96  
 Tare Wt. = 4.68  
 Minus #200 from wash = 85.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.92                       | 0.00         | #4                 | 521.80                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 484.87                  | 484.81               | 99.8          | 0.2              |
|                             |              | #20                | 405.66                  | 405.42               | 99.2          | 0.8              |
|                             |              | #40                | 362.77                  | 362.74               | 99.2          | 0.8              |
|                             |              | #60                | 367.67                  | 366.16               | 95.7          | 4.3              |
|                             |              | #140               | 345.61                  | 342.82               | 89.4          | 10.6             |
|                             |              | #200               | 346.18                  | 345.25               | 87.3          | 12.7             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 87.3  
 Weight of hydrometer sample = 43.92  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0140         | 1.0144            | 0.0132 | 11.0 | 13.4       | 0.0340         | 45.9          | 54.1             |
| 5.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0219         | 39.5          | 60.5             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 36.3          | 63.7             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 29.9          | 70.1             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 29.9          | 70.1             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 26.7          | 73.3             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 26.7          | 73.3             |

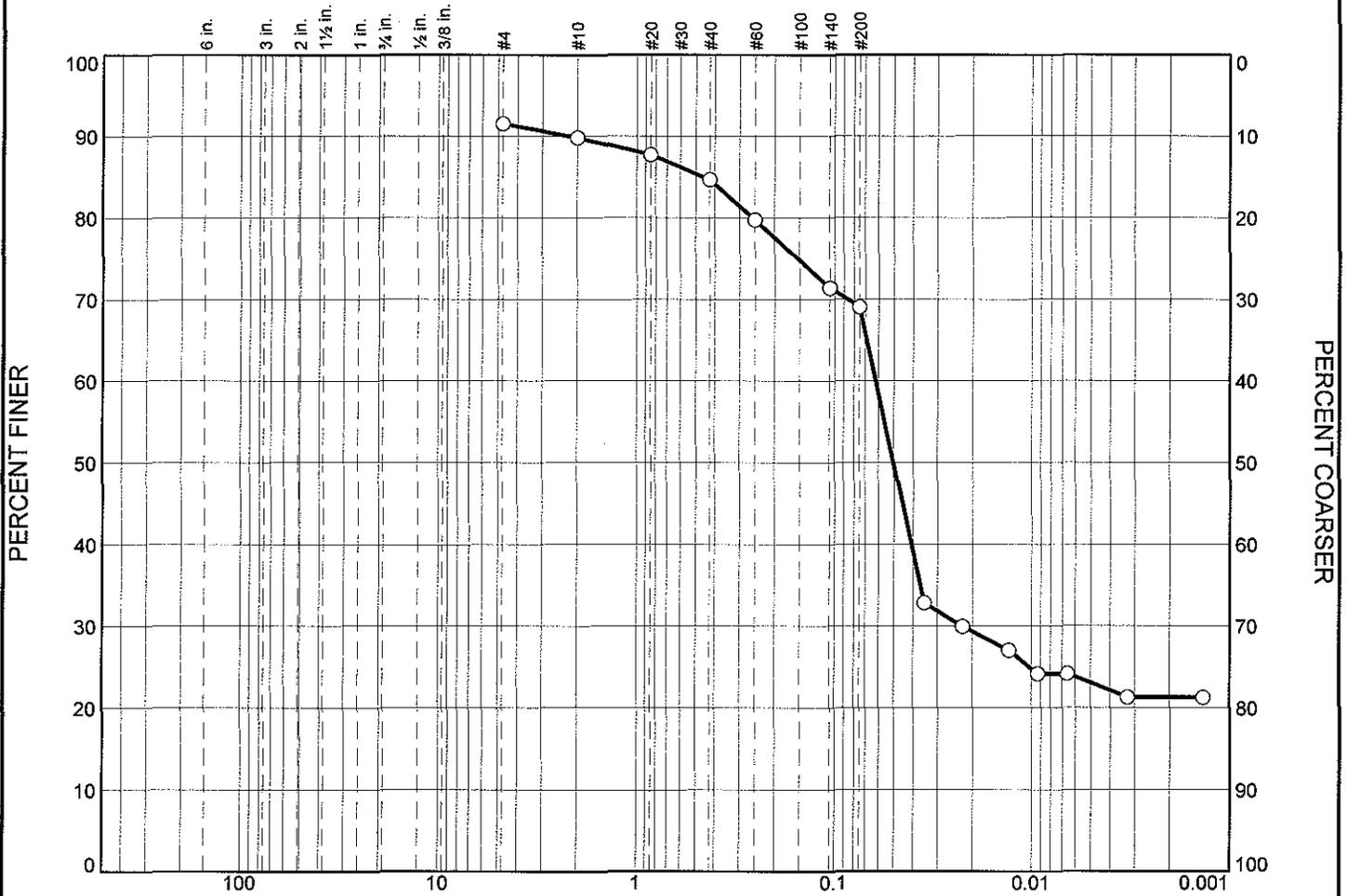
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.4     | 0.2  | 3.5  | 5.1  | 12.9    | 22.1  | 33.2 | 7.0  | 7.6  | 2.3     | 50.1  | 27.6 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0093 | 0.0368 | 0.0446 | 0.0653 | 0.0718 | 0.1151 | 0.2262 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.13                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Gravel | % Sand  |      |      |      | % Silt  |      |      |      | % Clay |         |
|------------|-----------|-----------|----------|---------|------|------|------|---------|------|------|------|--------|---------|
|            |           |           |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| 0          |           |           | 1.4      | 1.7     | 2.7  | 5.6  | 6.8  | 12.6    | 28.4 | 4.0  | 3.8  | 2.2    | 22.0    |

| LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| 0  |    | 0.4579          | 0.0620          | 0.0503          | 0.0226          |                 |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

|  |                                   |
|--|-----------------------------------|
| <b>Project No.</b> L0912914 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 504212 <b>Sample Number:</b> L0912914-14 | <b>Remarks:</b><br><br><br>Figure |
| Alpha Analytical<br>Mansfield, MA  |                                   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504212  
 Sample Number: L0912914-14  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 16.85  
 Tare Wt. = 4.70  
 Minus #200 from wash = 68.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 38.42                       | 0.00         | #4                 | 524.06                  | 520.81               | 91.5          | 8.5              |
|                             |              | #10                | 482.77                  | 482.11               | 89.8          | 10.2             |
|                             |              | #20                | 411.89                  | 411.09               | 87.7          | 12.3             |
|                             |              | #40                | 379.04                  | 377.86               | 84.7          | 15.3             |
|                             |              | #60                | 371.73                  | 369.84               | 79.8          | 20.2             |
|                             |              | #140               | 350.38                  | 347.17               | 71.4          | 28.6             |
|                             |              | #200               | 347.41                  | 346.51               | 69.1          | 30.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 69.1  
 Weight of hydrometer sample = 38.42  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 32.8          | 67.2             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 29.9          | 70.1             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 27.0          | 73.0             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 24.2          | 75.8             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 24.2          | 75.8             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 21.3          | 78.7             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 21.3          | 78.7             |

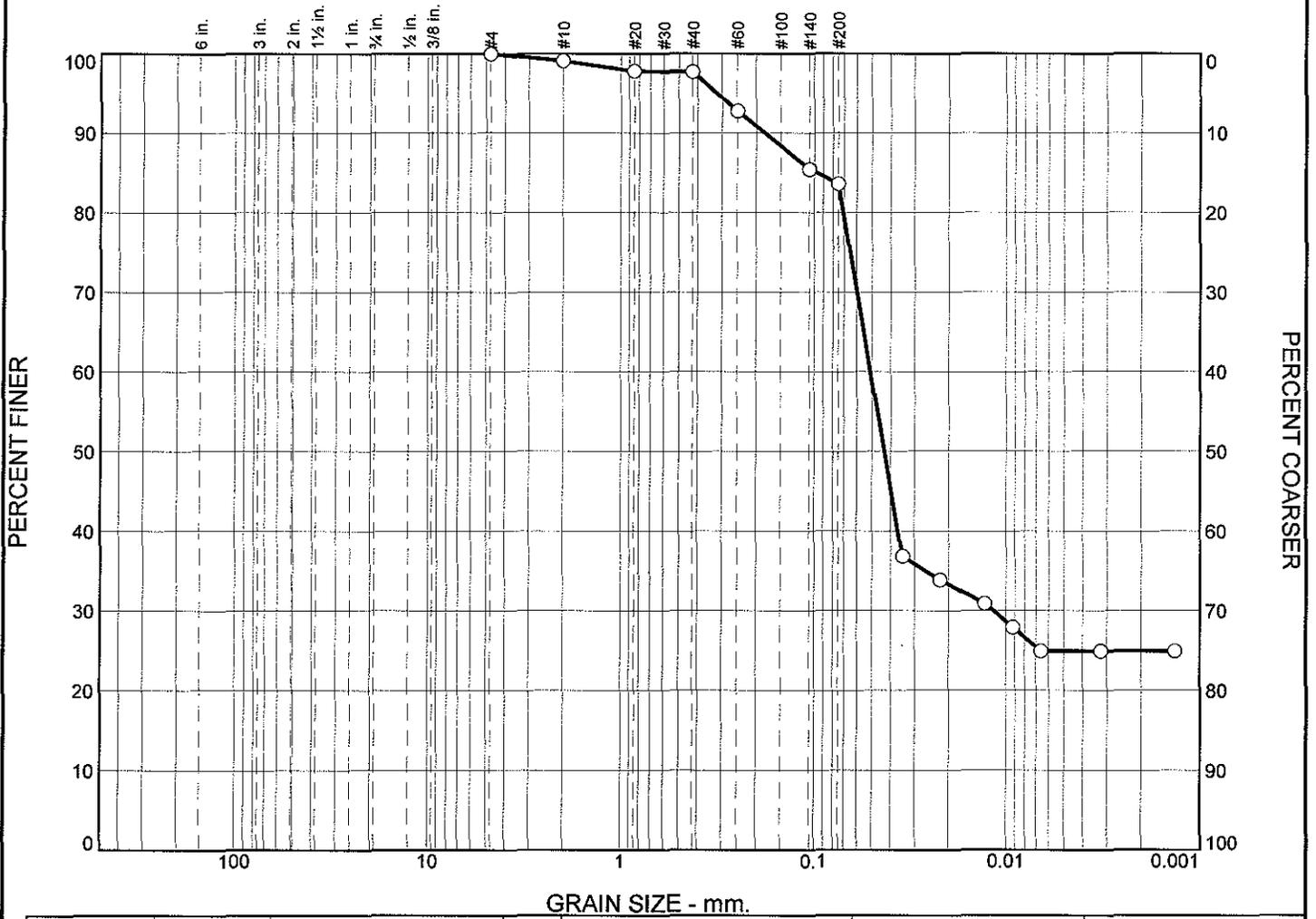
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 1.4      | 1.7     | 2.7  | 5.6  | 6.8  | 12.6    | 29.4  | 28.4 | 4.0  | 3.8  | 2.2     | 38.4 | 22.0  |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|-----|
|     |     |     | 0.0226 | 0.0503 | 0.0620 | 0.2568 | 0.4579 | 2.1864 |     |

| Fineness Modulus |
|------------------|
| 0.87             |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ | 0.0      | 0.0     | 0.2     | 0.7      | 1.1     | 0.3  | 4.9  | 5.9  | 14.4    | 36.4 | 4.2  | 5.5  | 1.5     | 24.9 |

| × | LL | PL | D85    | D60    | D50    | D30    | D15 | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|--------|-----|-----|----|----|
| ○ |    |    | 0.0975 | 0.0508 | 0.0431 | 0.0117 |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |   |
|--|---|
| <b>Project No.</b> L0912914 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 504213 <b>Sample Number:</b> L0912914-15 | <b>Remarks:</b><br><br><br><br><br><br><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |   |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504213  
 Sample Number: L0912914-15  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 13.16  
 Tare Wt. = 4.74  
 Minus #200 from wash = 81.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.08                       | 0.00         | #4                 | 521.77                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.23                  | 484.81               | 99.1          | 0.9              |
|                             |              | #20                | 405.99                  | 405.42               | 97.8          | 2.2              |
|                             |              | #40                | 362.79                  | 362.74               | 97.7          | 2.3              |
|                             |              | #60                | 368.38                  | 366.16               | 92.8          | 7.2              |
|                             |              | #140               | 346.12                  | 342.82               | 85.4          | 14.6             |
|                             |              | #200               | 346.09                  | 345.25               | 83.6          | 16.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 83.6  
 Weight of hydrometer sample = 45.08  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 36.8          | 63.2             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 33.9          | 66.1             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0129         | 30.9          | 69.1             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 27.9          | 72.1             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 24.9          | 75.1             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 24.9          | 75.1             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 24.9          | 75.1             |

## Fractional Components

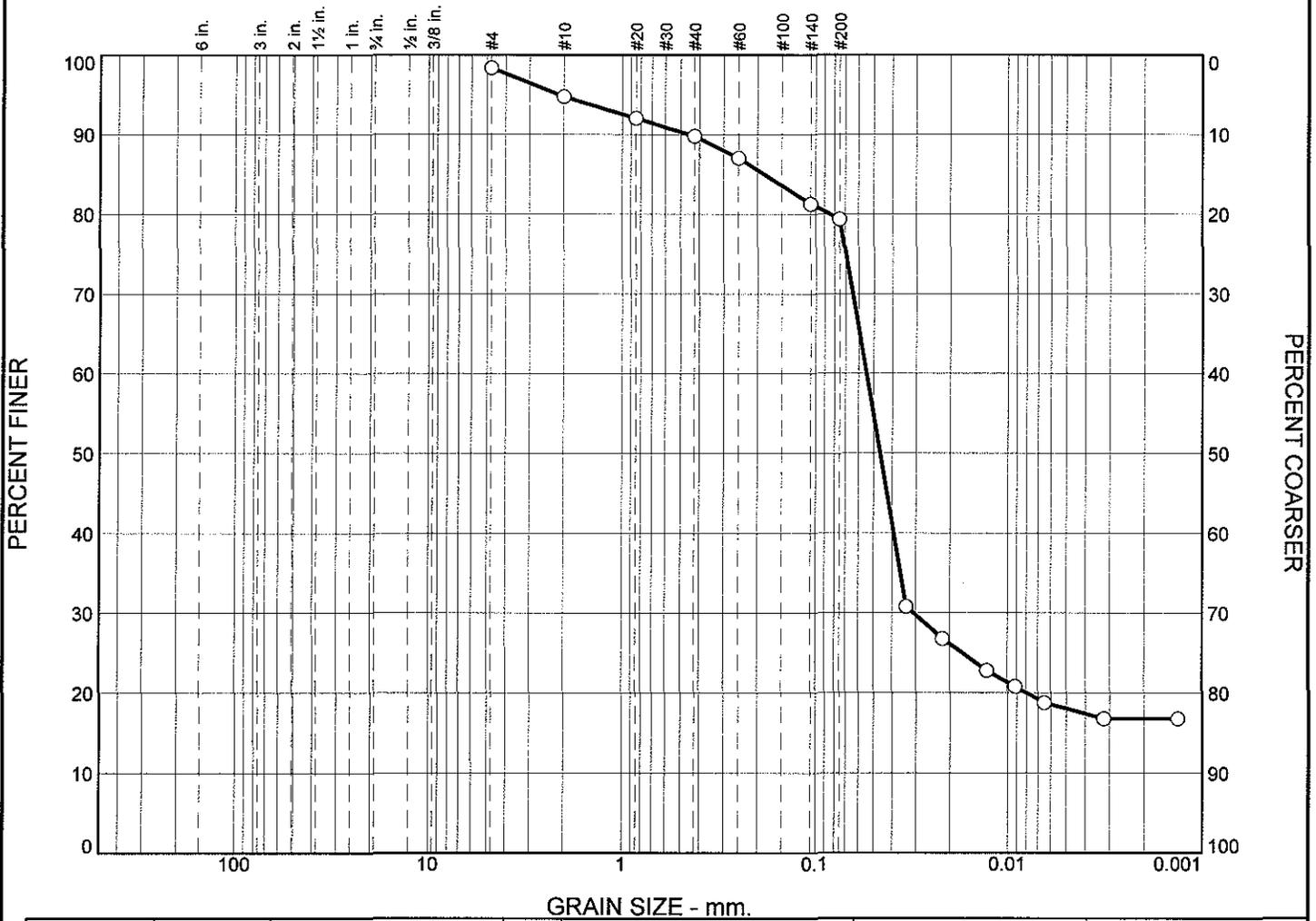
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
| 0.0      | 0.0     | 0.2     | 0.7      | 1.1     | 0.3  | 4.9  | 5.9  | 14.4    | 26.6  | 36.4 | 4.2  | 5.5  | 1.5     | 47.6 | 24.9  |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0117 | 0.0431 | 0.0508 | 0.0707 | 0.0975 | 0.1807 | 0.3180 |

| Fineness Modulus |
|------------------|
| 0.22             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | Granules        | Sand            |                 |                 |                 | Silt           |                |      |      | Clay |         |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|------|---------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |      | V. Fine |
| ○ |          |         |                 | 2.9             | 2.1             | 2.3             | 3.3             | 4.6             | 14.1           | 38.3           | 5.7  | 4.4  | 2.6  | 17.3    |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |      |         |
| ○ |          |         | 0.1848          | 0.0545          | 0.0462          | 0.0308          |                 |                 |                |                |      |      |      |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504226    <b>Sample Number:</b> L0912914-16</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504226  
 Sample Number: L0912914-16  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 18.31  
 Tare Wt. = 4.90  
 Minus #200 from wash = 78.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 63.57                       | 0.00         | #4                 | 521.85                  | 520.81               | 98.4          | 1.6              |
|                             |              | #10                | 484.41                  | 482.11               | 94.7          | 5.3              |
|                             |              | #20                | 412.81                  | 411.09               | 92.0          | 8.0              |
|                             |              | #40                | 379.29                  | 377.86               | 89.8          | 10.2             |
|                             |              | #60                | 371.60                  | 369.84               | 87.0          | 13.0             |
|                             |              | #140               | 350.82                  | 347.17               | 81.3          | 18.7             |
|                             |              | #200               | 347.75                  | 346.51               | 79.3          | 20.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 79.3  
 Weight of hydrometer sample = 63.57  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0150         | 1.0154            | 0.0132 | 12.0 | 13.1       | 0.0337         | 30.8          | 69.2             |
| 5.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0217         | 26.8          | 73.2             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 22.8          | 77.2             |
| 30.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0091         | 20.8          | 79.2             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 18.8          | 81.2             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 16.8          | 83.2             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 16.8          | 83.2             |

## Fractional Components

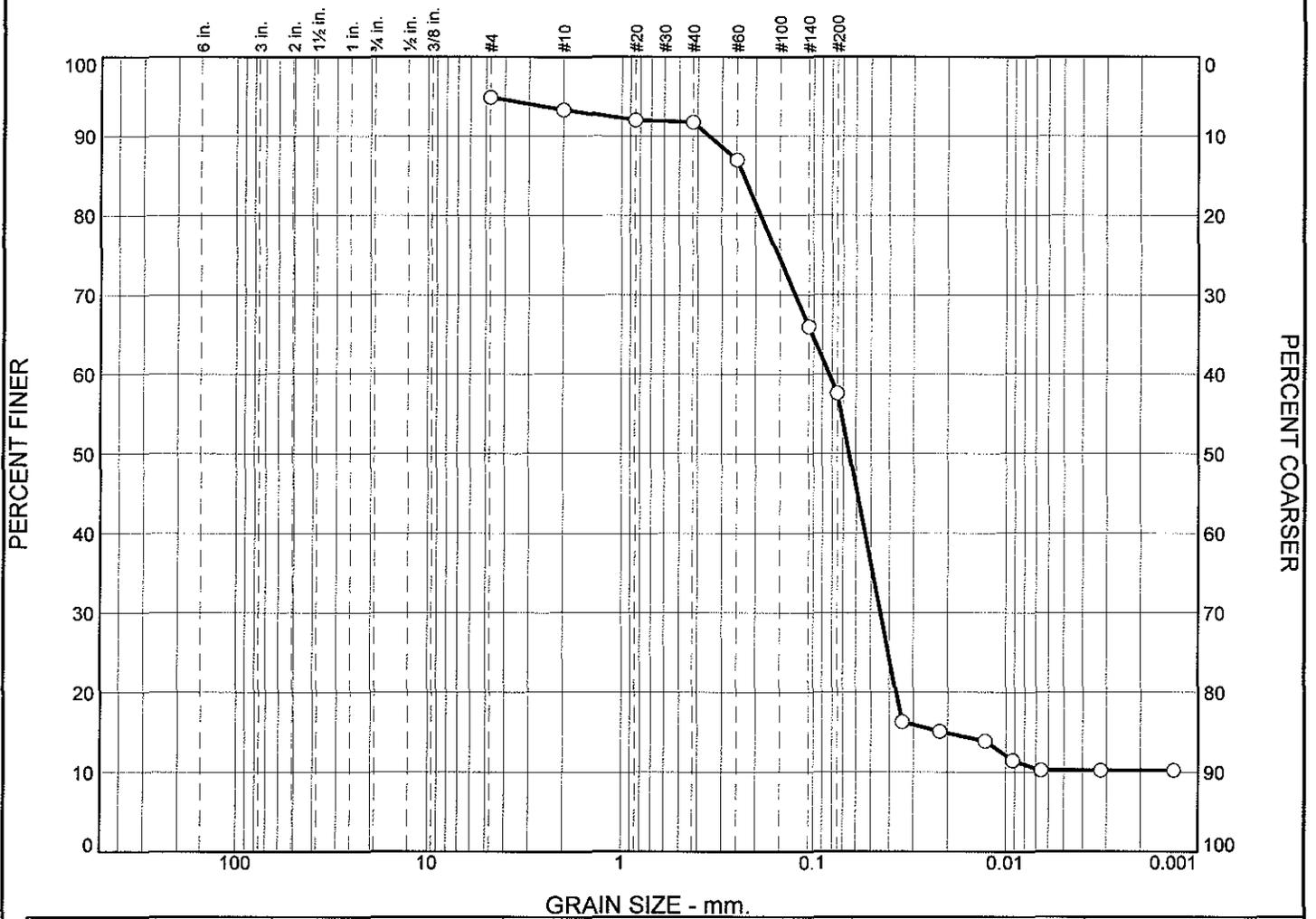
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.9      | 2.1     | 2.3  | 3.3  | 4.6  | 14.1    | 26.4  | 38.3 | 5.7  | 4.4  | 2.6     | 51.0  | 17.3 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0080 | 0.0308 | 0.0462 | 0.0545 | 0.0845 | 0.1848 | 0.4533 | 2.1252 |

| Fineness Modulus |
|------------------|
| 0.51             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------|------------|---------|--------|--------|------|----------------|----------------|------|------|--------|---------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |           | 1.3        | 1.0     | 0.5    | 4.8    | 17.0 | 22.0           | 32.0           | 1.7  | 3.5  | 0.6    | 10.2    |
| × | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 0.2304    | 0.0828     | 0.0650  | 0.0445 | 0.0211 |      |                |                |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504311    <b>Sample Number:</b> L0912914-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912914

Location: 504311

Sample Number: L0912914-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 39.99  
 Tare Wt. = 4.70  
 Minus #200 from wash = 53.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 75.85                       | 0.00         | #4                 | 525.66                  | 521.77               | 94.9          | 5.1              |
|                             |              | #10                | 485.98                  | 484.81               | 93.3          | 6.7              |
|                             |              | #20                | 406.42                  | 405.42               | 92.0          | 8.0              |
|                             |              | #40                | 362.94                  | 362.74               | 91.7          | 8.3              |
|                             |              | #60                | 369.76                  | 366.16               | 87.0          | 13.0             |
|                             |              | #140               | 358.76                  | 342.82               | 66.0          | 34.0             |
|                             |              | #200               | 351.61                  | 345.25               | 57.6          | 42.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 57.6

Weight of hydrometer sample = 75.85

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 16.3          | 83.7             |
| 5.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0219         | 15.1          | 84.9             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 13.9          | 86.1             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 11.4          | 88.6             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0066         | 10.2          | 89.8             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 10.2          | 89.8             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 10.2          | 89.8             |

## Fractional Components

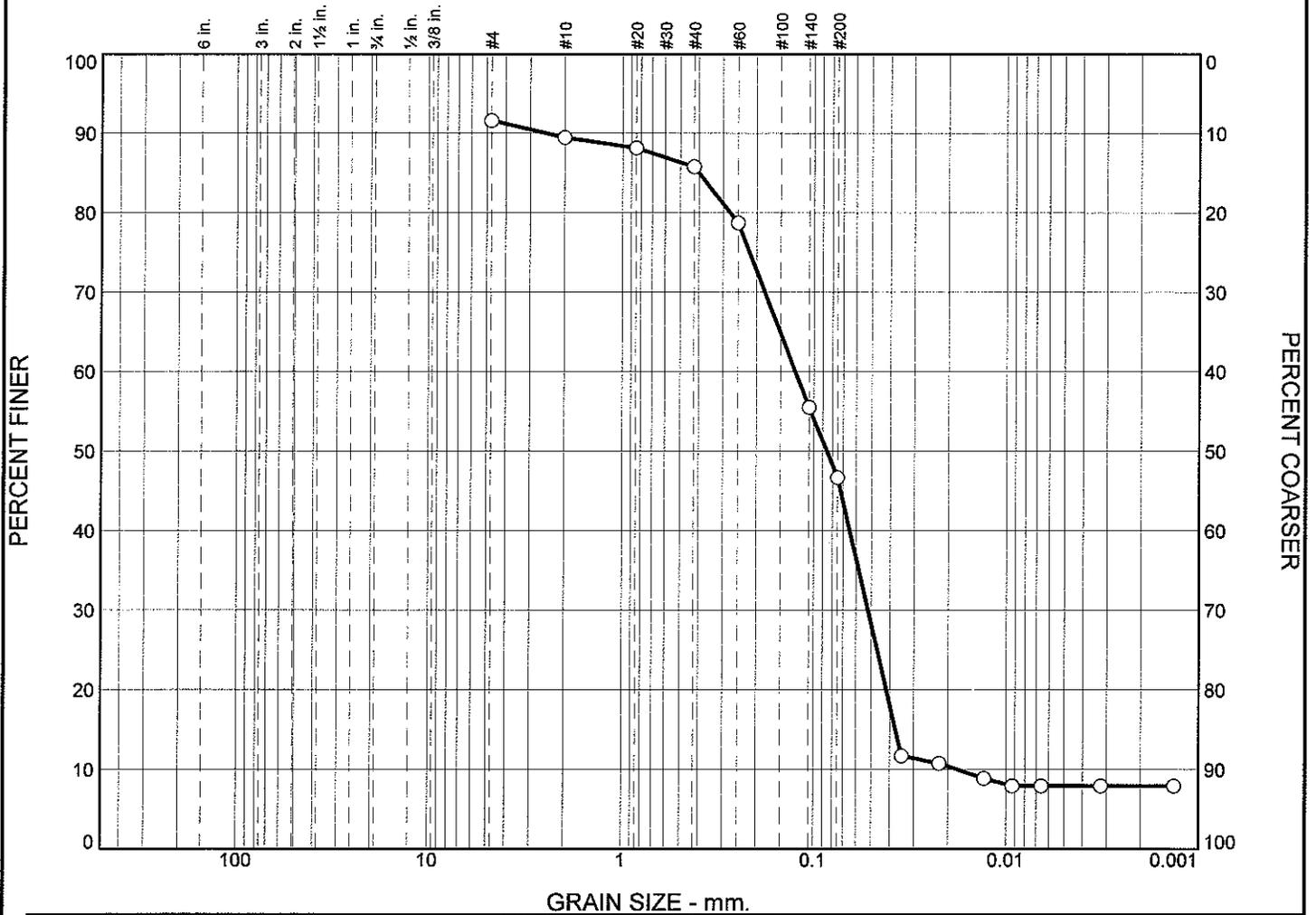
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.3      | 1.0     | 0.5  | 4.8  | 17.0 | 22.0    | 45.3  | 32.0 | 1.7  | 3.5  | 0.6     | 37.8  | 10.2 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|-----|
|     | 0.0211 | 0.0368 | 0.0445 | 0.0650 | 0.0828 | 0.1878 | 0.2304 | 0.3496 |     |

| Fineness Modulus |
|------------------|
| 0.64             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 1.7      | 1.1     | 2.1  | 7.6  | 18.7 | 21.6    | 26.9 | 2.0  | 1.6  | 0.0     | 7.9  |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○  |    | 0.4004 | 0.1252 | 0.0855 | 0.0519 | 0.0373 | 0.0179 | 1.20 | 6.99 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                                   |
|--|-----------------------------------|
| <b>Project No.</b> L0912914 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 504312 <b>Sample Number:</b> L0912914-18 | <b>Remarks:</b><br><br><br>Figure |
| Alpha Analytical<br>Mansfield, MA  |                                   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504312  
 Sample Number: L0912914-18  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 48.01  
 Tare Wt. = 4.70  
 Minus #200 from wash = 45.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 79.20                       | 0.00         | #4                 | 527.46                  | 520.81               | 91.6          | 8.4              |
|                             |              | #10                | 483.81                  | 482.11               | 89.5          | 10.5             |
|                             |              | #20                | 412.12                  | 411.09               | 88.2          | 11.8             |
|                             |              | #40                | 379.73                  | 377.86               | 85.8          | 14.2             |
|                             |              | #60                | 375.45                  | 369.84               | 78.7          | 21.3             |
|                             |              | #140               | 365.55                  | 347.17               | 55.5          | 44.5             |
|                             |              | #200               | 353.52                  | 346.51               | 46.7          | 53.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 46.7  
 Weight of hydrometer sample = 79.20  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 11.7          | 88.3             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 10.8          | 89.2             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 8.9           | 91.1             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 7.9           | 92.1             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 7.9           | 92.1             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 7.9           | 92.1             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 7.9           | 92.1             |

## Fractional Components

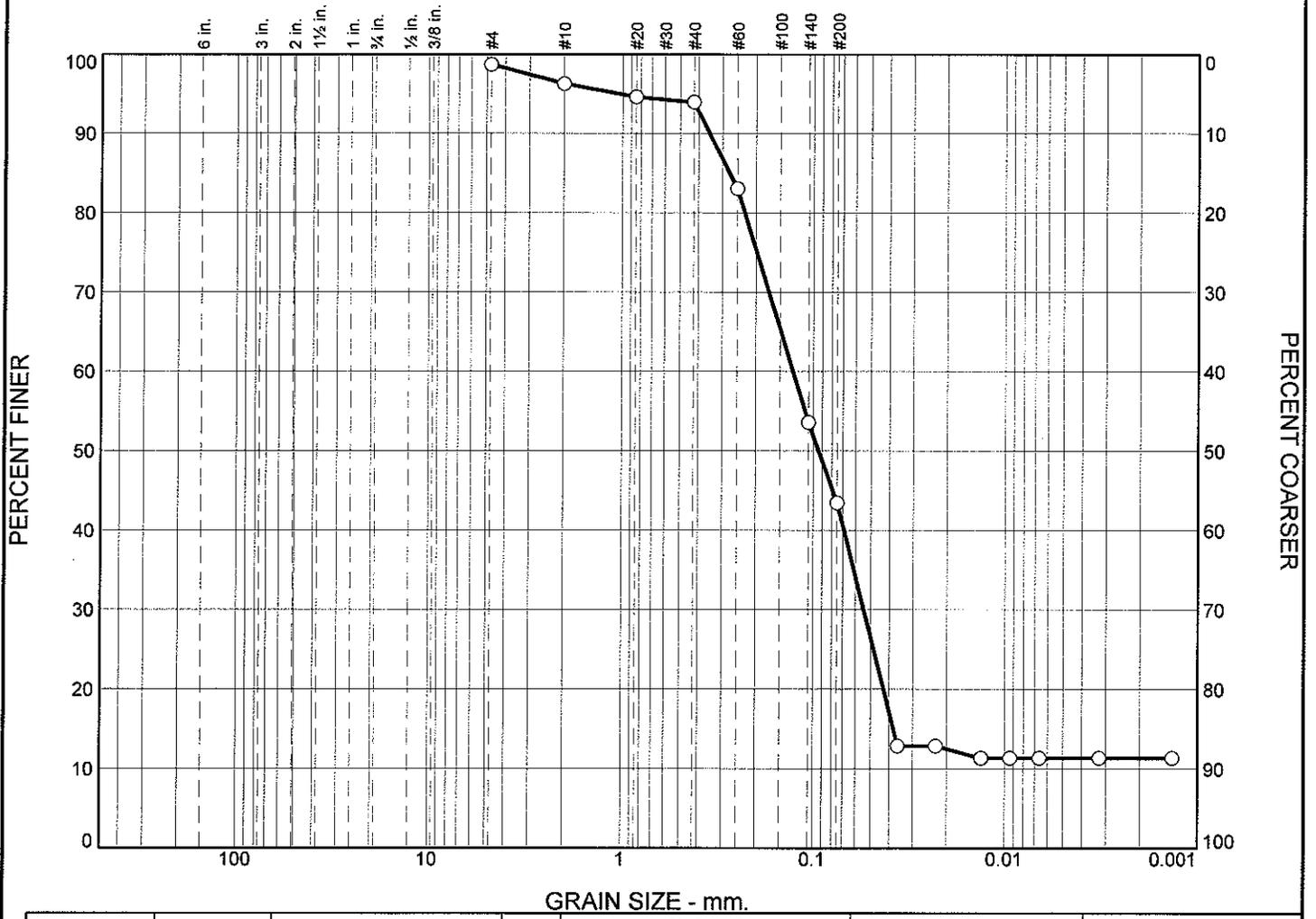
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 1.1     | 2.1  | 7.6  | 18.7 | 21.6    | 51.1  | 26.9 | 2.0  | 1.6  | 0.0     | 30.5  | 7.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0179          | 0.0373          | 0.0417          | 0.0519          | 0.0855          | 0.1252          | 0.2753          | 0.4004          | 2.4891          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.97             | 6.99           | 1.20           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 1.9      | 1.4     | 0.8  | 11.1 | 23.8 | 23.4    | 23.0 | 1.0  | 0.5  | 0.0     | 11.3 |

| × | LL | PL | D85    | D60    | D50    | D30    | D15    | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|--------|--------|-----|----|----|
| ○ |    |    | 0.2750 | 0.1278 | 0.0938 | 0.0543 | 0.0379 |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504313    <b>Sample Number:</b> L0912914-19</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504313  
 Sample Number: L0912914-19  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 32.81  
 Tare Wt. = 4.69  
 Minus #200 from wash = 38.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.45                       | 0.00         | #4                 | 522.35                  | 521.77               | 98.7          | 1.3              |
|                             |              | #10                | 485.91                  | 484.81               | 96.3          | 3.7              |
|                             |              | #20                | 406.19                  | 405.42               | 94.6          | 5.4              |
|                             |              | #40                | 363.04                  | 362.74               | 93.9          | 6.1              |
|                             |              | #60                | 371.12                  | 366.16               | 83.0          | 17.0             |
|                             |              | #140               | 356.21                  | 342.82               | 53.6          | 46.4             |
|                             |              | #200               | 349.86                  | 345.25               | 43.4          | 56.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 43.4  
 Weight of hydrometer sample = 45.45  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0360         | 12.8          | 87.2             |
| 5.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0228         | 12.8          | 87.2             |
| 15.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0133         | 11.3          | 88.7             |
| 30.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0094         | 11.3          | 88.7             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 11.3          | 88.7             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 11.3          | 88.7             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 11.3          | 88.7             |

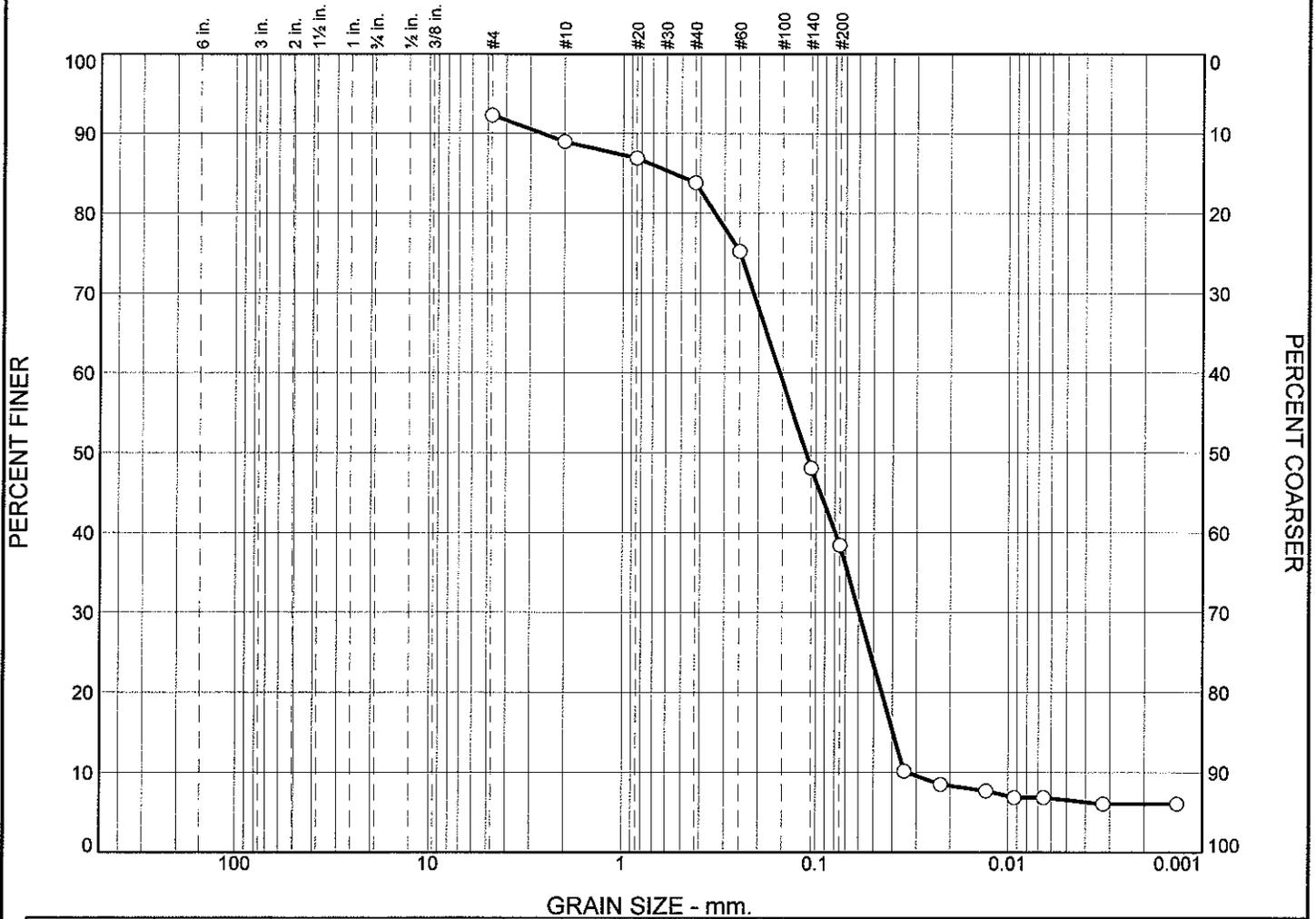
## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.9      | 1.4     | 0.8  | 11.1 | 23.8 | 23.4    | 60.5  | 23.0 | 1.0  | 0.5  | 0.0     | 24.5  | 11.3 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0379 | 0.0427 | 0.0543 | 0.0938 | 0.1278 | 0.2288 | 0.2750 | 0.3507 | 1.0353 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.63                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |      |      |      | % Silt  |      |      |      | % Clay |         |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|------|------|------|--------|---------|
|   |          |   |         |   |         |   |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○ |          |   |         |   |         |   | 2.6      | 1.7     | 2.7  | 9.4  | 21.9 | 21.6    | 22.0 | 1.7  | 1.1  | 0.6    | 6.3     |

| × | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.5516          | 0.1545          | 0.1127          | 0.0596          | 0.0396          | 0.0333          | 0.69           | 4.64           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912914    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504326    <b>Sample Number:</b> L0912914-20</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912914

Location: 504326

Sample Number: L0912914-20

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 52.42  
 Tare Wt. = 4.87  
 Minus #200 from wash = 36.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 75.14                       | 0.00         | #4                 | 526.60                  | 520.81               | 92.3          | 7.7              |
|                             |              | #10                | 484.60                  | 482.11               | 89.0          | 11.0             |
|                             |              | #20                | 412.64                  | 411.09               | 86.9          | 13.1             |
|                             |              | #40                | 380.17                  | 377.86               | 83.8          | 16.2             |
|                             |              | #60                | 376.31                  | 369.84               | 75.2          | 24.8             |
|                             |              | #140               | 367.59                  | 347.17               | 48.1          | 51.9             |
|                             |              | #200               | 353.76                  | 346.51               | 38.4          | 61.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 38.4

Weight of hydrometer sample = 75.14

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 10.2          | 89.8             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 8.5           | 91.5             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 7.7           | 92.3             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 6.9           | 93.1             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 6.9           | 93.1             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 6.1           | 93.9             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 6.1           | 93.9             |

## Fractional Components

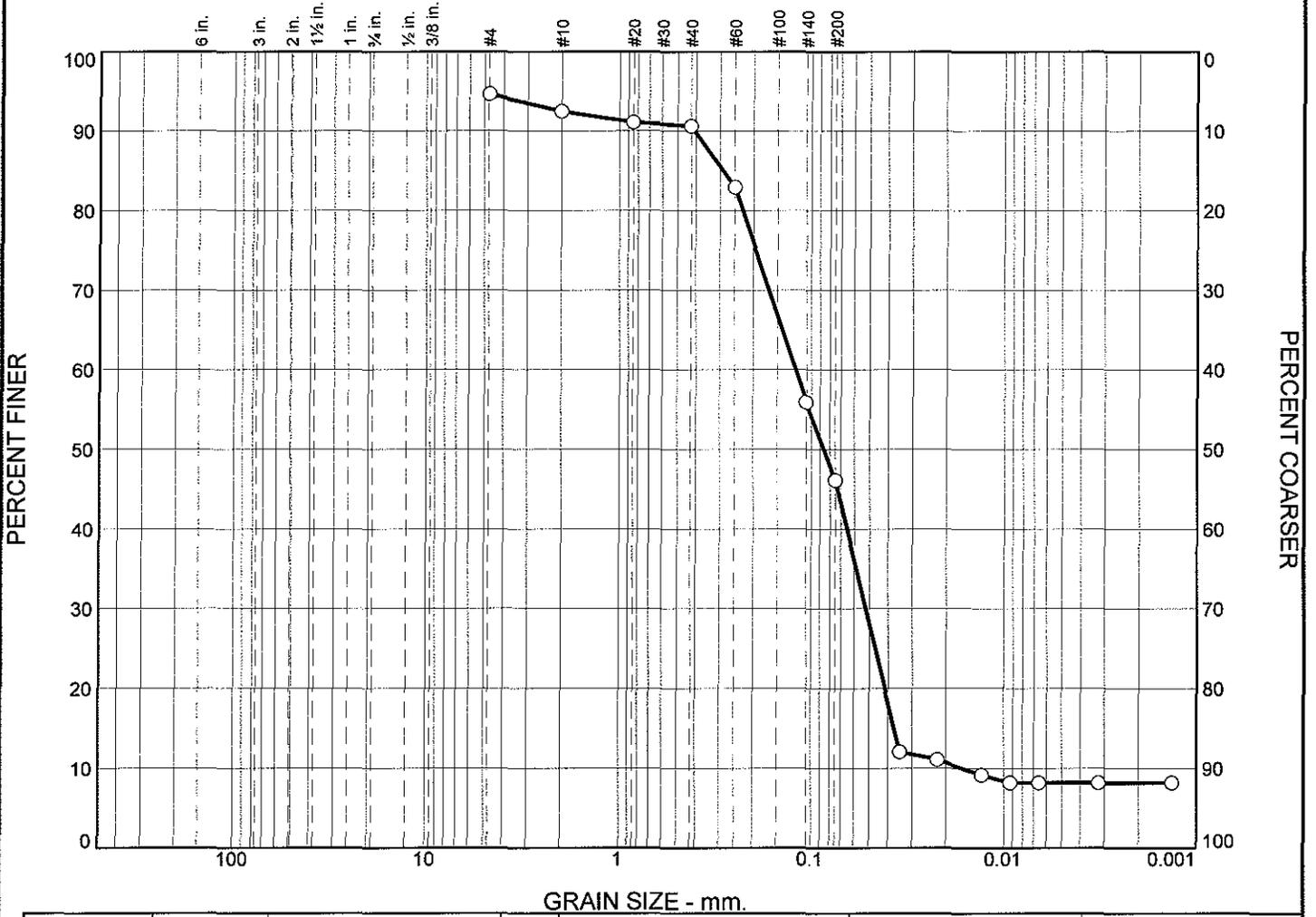
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.6      | 1.7     | 2.7  | 9.4  | 21.9 | 21.6    | 57.3  | 22.0 | 1.7  | 1.1  | 0.6     | 25.4  | 6.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0333          | 0.0396          | 0.0454          | 0.0596          | 0.1127          | 0.1545          | 0.3354          | 0.5516          | 2.6097          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.08             | 4.64           | 0.69           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      | Silt    |      |      |      | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |      |
| ○ |          |         |         | 1.7      | 1.1     | 0.7  | 7.8  | 21.8 | 23.0    | 26.3 | 2.0  | 1.6  | 8.2  |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○  |    | 0.2882 | 0.1207 | 0.0860 | 0.0521 | 0.0371 | 0.0165 | 1.36 | 7.33 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912914    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring

○ **Source of Sample:** 504326    **Sample Number:** WG383815-1

**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912914  
 Location: 504326  
 Sample Number: WG383815-1  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 48.79  
 Tare Wt. = 4.80  
 Minus #200 from wash = 42.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 75.96                       | 0.00         | #4                 | 525.84                  | 521.77               | 94.6          | 5.4              |
|                             |              | #10                | 486.45                  | 484.81               | 92.5          | 7.5              |
|                             |              | #20                | 406.48                  | 405.42               | 91.1          | 8.9              |
|                             |              | #40                | 363.08                  | 362.74               | 90.6          | 9.4              |
|                             |              | #60                | 372.01                  | 366.16               | 82.9          | 17.1             |
|                             |              | #140               | 363.35                  | 342.82               | 55.9          | 44.1             |
|                             |              | #200               | 352.68                  | 345.25               | 46.1          | 53.9             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 46.1  
 Weight of hydrometer sample = 75.96  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 12.1          | 87.9             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 11.1          | 88.9             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 9.1           | 90.9             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 8.2           | 91.8             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 8.2           | 91.8             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 8.2           | 91.8             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 8.2           | 91.8             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 1.1     | 0.7  | 7.8  | 21.8 | 23.0    | 54.4  | 26.3 | 2.0  | 1.6  |         | 29.9  | 8.2  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 0.0165 | 0.0371 | 0.0415 | 0.0521 | 0.0860 | 0.1207 | 0.2277 | 0.2882 | 0.4067 |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.78             | 7.33           | 1.36           |

## Certificate/Approval Program Summary

Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

### **New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. **NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

*Air* (Organic Parameters: EPA TO-15)

**U.S. Army Corps of Engineers**

**Department of Defense** Certificate/Lab ID: L2217.01.

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

#### **Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

Station 222

# CHAIN OF CUSTODY

PAGE 230F 41



Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912914

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
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SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 1                              | 503911    | 9/26/09    | 10:08 | SE            | HC                 |
| 2                              | 503912    | 9/26/09    | 10:08 | SE            | HC                 |
| 3                              | 503913    | 9/26/09    | 10:08 | SE            | HC                 |
|                                | 503925    | 9/26/09    | 10:08 | SE            | HC                 |
| 4                              | 503926    | 9/26/09    | 10:08 | SE            | HC                 |
|                                | 503927    | 9/26/09    | 10:08 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

Relinquished By: *Lee Weishar* Date/Time: 9/26/09 19:12  
 Received By: *John McCann* Date/Time: 9/26/09 19:17  
*P. Schubert* 9/28/09 10:20  
*Y. Schubert* 9/29/09 9:25  
*Y. Schubert* 9/29/09 1:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY



Serial No. 08

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-00018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912914

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Preservation  
 Lab to do  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 504111    | 9/25/09    | 12:13 | SE            | JB                 |
| 10                             | 504112    | 9/25/09    | 12:38 | SE            | JB                 |
| 11                             | 504113    | 9/25/09    | 12:45 | SE            | JB                 |
|                                | 504125    | 9/25/09    | 12:22 | SE            | JB                 |
| 12                             | 504126    | 9/25/09    | 12:22 | SE            | JB                 |
|                                | 504127    | 9/25/09    | 12:22 | SE            | JB                 |

Container Type

G    G    G    -    -    -    -    -    -    -    -    -

Preservative

A    A    A    -    -    -    -    -    -    -    -    -

Relinquished By:

Date/Time

Received By:

Date/Time

*James Bajek*  
*Kelly McLean*  
*P. Sillcut*

9/25/09 12:55  
 9/28/09 09:13  
 9/28/09 10:20

*James Bajek*  
*P. Sillcut*  
*K. Sillcut*

9/25/09 190  
 9/28/09 9:25  
 9/28/09 10:20

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 226

# CHAIN OF CUSTODY

PAGE 3 OF 41



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: 20912914

## Report Information Data Deliverables Billing Information

FAX  EMAIL  Same as Client info PO #:  
 ADEx  Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program Criteria  
fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 13 | 504211 | 9/25/09 | 09:58 | SE | HC |
| 14 | 504212 | 9/25/09 | 09:58 | SE | HC |
| 15 | 504213 | 9/25/09 | 09:58 | SE | HC |
|    | 504225 | 9/25/09 | 10:02 | SE | HC |
| 16 | 504226 | 9/25/09 | 10:02 | SE | HC |
|    | 504227 | 9/25/09 | 10:02 | SE | HC |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
|---------------------|---------------|---------------------|---------------|
| <i>Herb J. ...</i>  | 9/25/09 19:04 | <i>Patricia ...</i> | 9/25/09 19:04 |
| <i>Patricia ...</i> | 9/28/09 09:13 | <i>P. ...</i>       | 9/28/09 9:25  |
| <i>P. ...</i>       | 9/28/09 10:20 | <i>...</i>          | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912915  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912915-01                | 504411           | NEW BEDFORD, MA            | 09/25/09 10:48                  |
| L0912915-02                | 504412           | NEW BEDFORD, MA            | 09/25/09 11:25                  |
| L0912915-03                | 504413           | NEW BEDFORD, MA            | 09/25/09 11:30                  |
| L0912915-04                | 504426           | NEW BEDFORD, MA            | 09/25/09 11:00                  |
| L0912915-05                | 504511           | NEW BEDFORD, MA            | 09/25/09 10:00                  |
| L0912915-06                | 504512           | NEW BEDFORD, MA            | 09/25/09 10:16                  |
| L0912915-07                | 504513           | NEW BEDFORD, MA            | 09/25/09 10:21                  |
| L0912915-08                | 504526           | NEW BEDFORD, MA            | 09/25/09 10:08                  |
| L0912915-09                | 504611           | NEW BEDFORD, MA            | 09/25/09 13:30                  |
| L0912915-10                | 504612           | NEW BEDFORD, MA            | 09/25/09 13:58                  |
| L0912915-11                | 504613           | NEW BEDFORD, MA            | 09/25/09 14:06                  |
| L0912915-12                | 504626           | NEW BEDFORD, MA            | 09/25/09 13:40                  |
| L0912915-13                | 504711           | NEW BEDFORD, MA            | 09/25/09 14:37                  |
| L0912915-14                | 504712           | NEW BEDFORD, MA            | 09/25/09 14:55                  |
| L0912915-15                | 504713           | NEW BEDFORD, MA            | 09/25/09 15:04                  |
| L0912915-16                | 504726           | NEW BEDFORD, MA            | 09/25/09 14:45                  |
| L0912915-17                | 504811           | NEW BEDFORD, MA            | 09/25/09 13:06                  |
| L0912915-18                | 504812           | NEW BEDFORD, MA            | 09/25/09 13:06                  |
| L0912915-19                | 504813           | NEW BEDFORD, MA            | 09/25/09 13:06                  |
| L0912915-20                | 504826           | NEW BEDFORD, MA            | 09/25/09 13:09                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 23, 2009. The report was ammended to include revised Grain Size data.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

**Case Narrative (continued)**

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-01  
**Client ID:** 504411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 10:48  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.10   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.90   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 21.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 18.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.5   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 19.7   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.60   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-02  
**Client ID:** 504412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 11:25  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.70   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 15.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.7   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.6   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-03  
**Client ID:** 504413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 11:30  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.20   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.10   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 18.9   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 16.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.9   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 21.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.90   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-04  
**Client ID:** 504426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 11:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 19.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 16.5   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.9   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 22.6   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.60   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-05  
**Client ID:** 504511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 10:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.400  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.400  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.800  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.30   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 43.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 46.4   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-06  
**Client ID:** 504512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 10:16  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.200  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.20   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.50   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 7.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 38.4   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 43.4   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-07  
**Client ID:** 504513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 10:21  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.600  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.500  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.40   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 38.5   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-08  
**Client ID:** 504526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 10:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.900  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.7   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 52.4   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 32.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-09  
**Client ID:** 504611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 13:30  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.90   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.50   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 14.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 40.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 19.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-10  
**Client ID:** 504612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 13:58  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.30   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.90   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.2   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 41.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.7   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-11  
**Client ID:** 504613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:06  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.600  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.700  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.40   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.70   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 46.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.4   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-12  
**Client ID:** 504626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 13:40  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.50   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.40   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 18.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-13  
**Client ID:** 504711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:37  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.70   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.70   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.5   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 16.7   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.9   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 21.6   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.60   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-14  
**Client ID:** 504712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:55  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.600  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.70   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.9   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 33.7   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 35.1   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-15  
**Client ID:** 504713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:04  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 8.20   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.5   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 20.6   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.70   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-16  
**Client ID:** 504726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:45  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 11.9   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 11.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.7   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 12.9   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.10   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 8.70   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.20   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-17  
**Client ID:** 504811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 13:06  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 12.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 11.6   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.3   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.10   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 7.30   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 7.60   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-18  
**Client ID:** 504812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 13:06  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 16.0   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.00   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.60   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 2.10   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 2.10   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.400  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-19  
**Client ID:** 504813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 13:06  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.600  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.700  |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.40   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.10   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 22.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 60.4   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.30   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912915-20  
**Client ID:** 504826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 13:09  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 9.90   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.30   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.6   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 12.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.80   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 7.90   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 15.8   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.60   |           | %     | 0.100 | 1               | -             | 10/09/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912915

**Report Date:** 02/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG383817-1 QC Sample: L0912915-20 Client ID: 504826 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 9.9           | 9.60             | %     | 3   |      | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 8.3           | 8.50             | %     | 2   |      | 20         |
| Coarse Sand (0.50-1.00 mm)   | 10.6          | 9.90             | %     | 7   |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 12.8          | 12.3             | %     | 4   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 8.8           | 8.10             | %     | 8   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 7.9           | 8.10             | %     | 2   |      | 20         |
| Silt - (1.95-62.5 um)  | 15.8          | 15.2             | %     | 4   |      | 20         |
| Clay - (<1.95 um)  | 2.6           | 2.50             | %     | 4   |      | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912915

Project Number: TO-0018

Report Date: 02/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

## Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| D      | Absent       |
| E      | Absent       |
| G      | Absent       |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912915-01A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-02A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-03A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-04A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-05A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-06A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-07A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-08A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912915

Report Date: 02/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912915-09A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-10A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-11A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-12A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-13A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-14A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-15A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-16A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-17A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-18A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING**Project Number:** TO-0018**Lab Number:** L0912915**Report Date:** 02/03/10**Container Information**

| <b>Container ID</b> | <b>Container Type</b>   | <b>Cooler</b> | <b>pH</b> | <b>Temp<br/>deg C</b> | <b>Pres</b> | <b>Seal</b> | <b>Analysis</b>  |
|---------------------|-------------------------|---------------|-----------|-----------------------|-------------|-------------|--|
| L0912915-19A        | Glass 250ml unpreserved | E             | N/A       | 3.5                   | Y           | Absent      | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912915-20A        | Glass 250ml unpreserved | E             | N/A       | 3.5                   | Y           | Absent      | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912915  
**Report Date:** 02/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: I0912915

Location: 504411

Sample Number: L0912915-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.09                       | 0.00         | #4                 | 522.37                  | 520.81               | 97.5          | 2.5              |
|                             |              | #10                | 483.80                  | 482.11               | 94.8          | 5.2              |
|                             |              | #20                | 414.92                  | 411.09               | 88.6          | 11.4             |
|                             |              | #40                | 384.94                  | 377.86               | 77.2          | 22.8             |
|                             |              | #60                | 381.67                  | 369.84               | 58.1          | 41.9             |
|                             |              | #140               | 361.26                  | 347.17               | 35.4          | 64.6             |
|                             |              | #200               | 348.86                  | 346.51               | 31.7          | 68.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 31.7

Weight of hydrometer sample = 62.29

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0345         | 8.8           | 91.2             |
| 5.00                | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0220         | 8.0           | 92.0             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 8.0           | 92.0             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 7.1           | 92.9             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 7.1           | 92.9             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 6.3           | 93.7             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 6.3           | 93.7             |

## Fractional Components

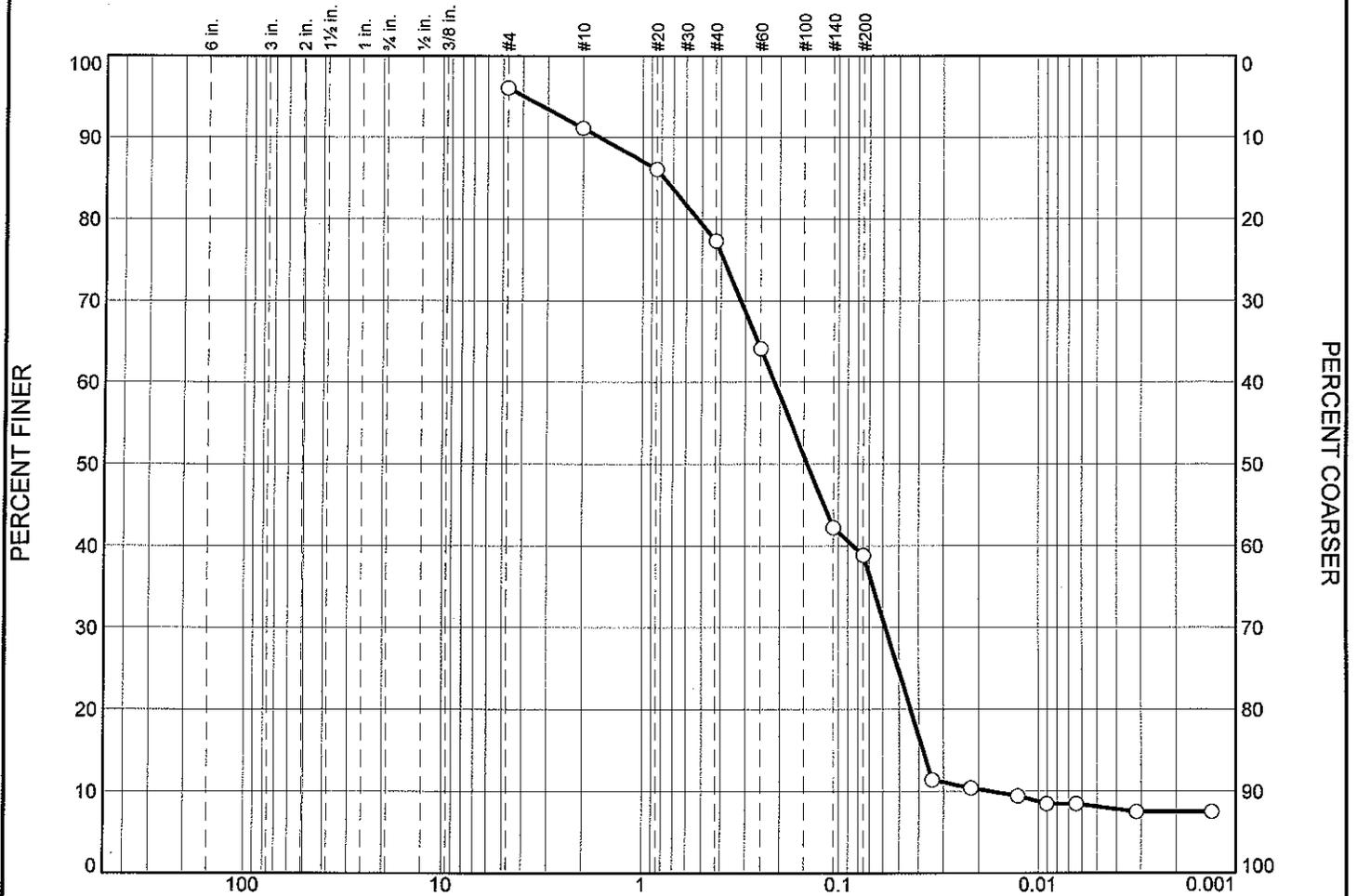
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.1      | 5.0     | 9.9  | 21.8 | 18.3 | 13.5    | 68.5  | 17.7 | 0.6  | 0.9  | 0.5     | 19.7  | 6.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0360          | 0.0426          | 0.0505          | 0.0709          | 0.1838          | 0.2633          | 0.5040          | 0.6831          | 1.0326          | 2.1546          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.24             | 7.32           | 0.53           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 4.0      | 4.0     | 7.7  | 15.3 | 17.7 | 14.0    | 21.3 | 1.3  | 1.3  | 0.7     | 7.8  |

| × | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu    |
|---|----|----|--------|--------|--------|--------|--------|--------|------|-------|
| ○ |    |    | 0.7798 | 0.2127 | 0.1438 | 0.0583 | 0.0380 | 0.0176 | 0.91 | 12.10 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** 10912915      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 504412      **Sample Number:** L0912915-02  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504412

Sample Number: L0912915-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 64.50                       | 0.00         | #4                 | 524.31                  | 521.77               | 96.1          | 3.9              |
|                             |              | #10                | 487.99                  | 484.81               | 91.1          | 8.9              |
|                             |              | #20                | 408.67                  | 405.42               | 86.1          | 13.9             |
|                             |              | #40                | 366.95                  | 361.28               | 77.3          | 22.7             |
|                             |              | #60                | 374.66                  | 366.16               | 64.1          | 35.9             |
|                             |              | #140               | 356.96                  | 342.82               | 42.2          | 57.8             |
|                             |              | #200               | 347.44                  | 345.25               | 38.8          | 61.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 38.8

Weight of hydrometer sample = 64.50

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0342         | 11.4          | 88.6             |
| 5.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0218         | 10.4          | 89.6             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 9.4           | 90.6             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 8.5           | 91.5             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 8.5           | 91.5             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 7.5           | 92.5             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 7.5           | 92.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.0      | 4.0     | 7.7  | 15.3 | 17.7 | 14.0    | 58.7  | 21.3 | 1.3  | 1.3  | 0.7     | 24.6  | 7.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0176          | 0.0380          | 0.0438          | 0.0583          | 0.1438          | 0.2127          | 0.5257          | 0.7798          | 1.6503          | 3.9425          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.22             | 12.10          | 0.91           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|----------|---------|---------|----------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |          |         |         |          | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |         |         | 3.2      | 4.8     | 9.1    | 18.9   | 16.3   | 12.9    | 18.9   | 1.2  | 0.7  | 0.5     | 6.9    |
| ⊗ | LL       | PL      | D85     | D60      | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |          |         | 0.9491  | 0.2715   | 0.1822  | 0.0663 | 0.0411 | 0.0350 | 0.46    | 7.75   |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <p><b>Project No.</b> 10912915     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504413     <b>Sample Number:</b> L0912915-03</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p><br><br><br><br><br><br><br><br><br><br><p style="text-align: center;"><b>Figure</b></p> |
|--|--|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504413

Sample Number: L0912915-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 61.28                       | 0.00         | #4                 | 524.39                  | 520.81               | 94.2          | 5.8              |
|                             |              | #10                | 484.56                  | 482.11               | 90.2          | 9.8              |
|                             |              | #20                | 414.72                  | 411.09               | 84.2          | 15.8             |
|                             |              | #40                | 384.19                  | 377.86               | 73.9          | 26.1             |
|                             |              | #60                | 379.93                  | 369.84               | 57.4          | 42.6             |
|                             |              | #140               | 359.53                  | 347.17               | 37.3          | 62.7             |
|                             |              | #200               | 348.59                  | 346.51               | 33.9          | 66.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 33.9

Weight of hydrometer sample = 61.28

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0345         | 9.5           | 90.5             |
| 5.00                | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0220         | 8.7           | 91.3             |
| 15.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0128         | 7.8           | 92.2             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 7.8           | 92.2             |
| 60.00               | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0065         | 6.9           | 93.1             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 6.9           | 93.1             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 6.9           | 93.1             |

## Fractional Components

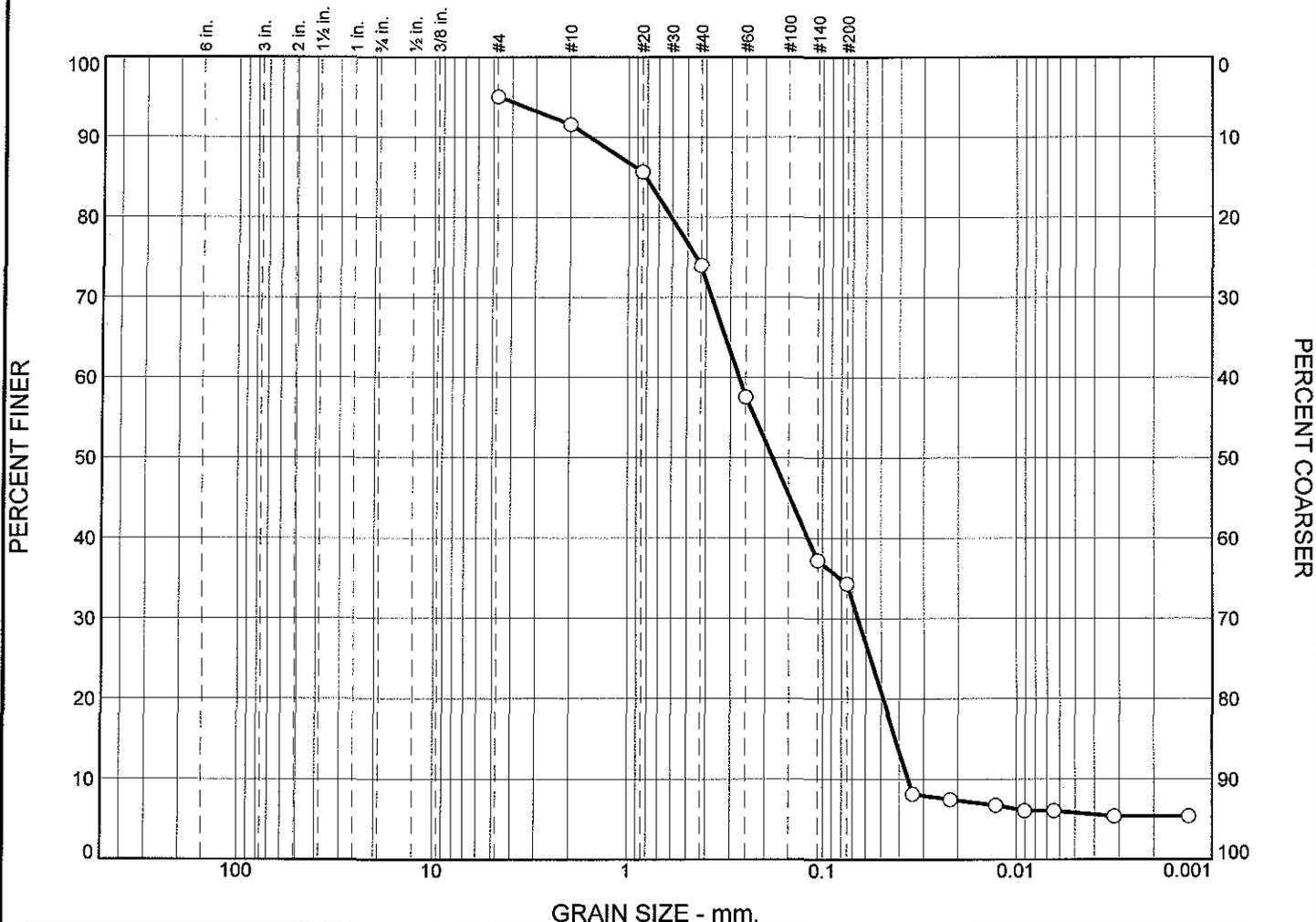
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.2      | 4.8     | 9.1  | 18.9 | 16.3 | 12.9    | 62.0  | 18.9 | 1.2  | 0.7  | 0.5     | 21.3  | 6.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0350          | 0.0411          | 0.0482          | 0.0663          | 0.1822          | 0.2715          | 0.6397          | 0.9491          | 1.9543          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.41             | 7.75           | 0.46           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 2.8             | 4.8             | 10.1            | 19.1            | 16.5            | 12.9           | 20.2           | 1.0  | 0.9  | 0.5    | 5.6     |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 0.8172          | 0.2703          | 0.1816          | 0.0659          | 0.0420          | 0.0362          | 0.44           | 7.47           |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912915      <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504426      <b>Sample Number:</b> L0912915-04</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504426

Sample Number: L0912915-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 79.51                       | 0.00         | #4                 | 525.70                  | 521.77               | 95.1          | 4.9              |
|                             |              | #10                | 487.58                  | 484.81               | 91.6          | 8.4              |
|                             |              | #20                | 410.12                  | 405.42               | 85.7          | 14.3             |
|                             |              | #40                | 370.56                  | 361.28               | 74.0          | 26.0             |
|                             |              | #60                | 379.20                  | 366.16               | 57.6          | 42.4             |
|                             |              | #140               | 359.02                  | 342.82               | 37.2          | 62.8             |
|                             |              | #200               | 347.55                  | 345.25               | 34.3          | 65.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 34.3

Weight of hydrometer sample = 79.51

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0342         | 8.1           | 91.9             |
| 5.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0218         | 7.5           | 92.5             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 6.8           | 93.2             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 6.1           | 93.9             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 6.1           | 93.9             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 5.4           | 94.6             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 5.4           | 94.6             |

## Fractional Components

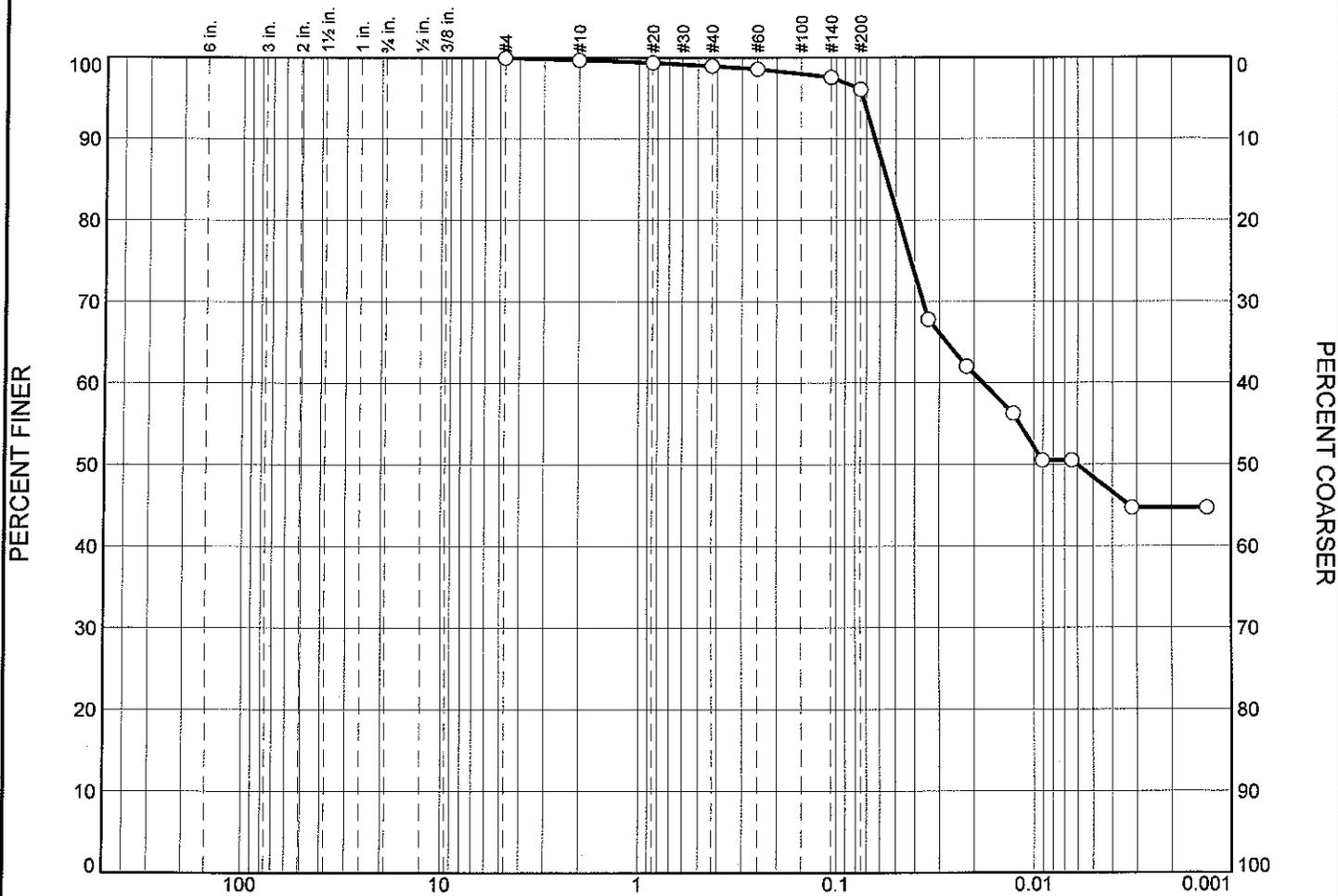
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.8      | 4.8     | 10.1 | 19.1 | 16.5 | 12.9    | 63.4  | 20.2 | 1.0  | 0.9  | 0.5     | 22.6  | 5.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0362          | 0.0420          | 0.0488          | 0.0659          | 0.1816          | 0.2703          | 0.6073          | 0.8172          | 1.5926          | 4.6830          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.36             | 7.47           | 0.44           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       |                 | % Granules      | % Sand          |                 |                 |                |                | % Silt |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|------|---------|--------|--|
|   |            |           |                 |                 |                 | V. Crs.         | Crs.            | Med.            | Fine           | V. Fine        | Crs.   | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 |                 | 0.2             | 0.3             | 0.4             | 0.4             | 0.8            | 8.3            | 23.0   | 8.1  | 7.9  | 4.1     | 46.4   |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |      |      |         |        |  |
| ○ |            |           | 0.0551          | 0.0181          | 0.0060          |                 |                 |                 |                |                |        |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912915      <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504511      <b>Sample Number:</b> L0912915-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: 10912915  
 Location: 504511  
 Sample Number: L0912915-05  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 26.74                       | 0.00         | #4                 | 520.82                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.18                  | 482.11               | 99.7          | 0.3              |
|                             |              | #20                | 411.18                  | 411.09               | 99.4          | 0.6              |
|                             |              | #40                | 377.97                  | 377.86               | 99.0          | 1.0              |
|                             |              | #60                | 369.94                  | 369.84               | 98.6          | 1.4              |
|                             |              | #140               | 347.44                  | 347.17               | 97.6          | 2.4              |
|                             |              | #200               | 346.91                  | 346.51               | 96.1          | 3.9              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 96.1  
 Weight of hydrometer sample = 26.74  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0342         | 67.8          | 32.2             |
| 5.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0218         | 62.0          | 38.0             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 56.3          | 43.7             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 50.5          | 49.5             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 50.5          | 49.5             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 44.7          | 55.3             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 44.7          | 55.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 0.3     | 0.4  | 0.4  | 0.8  | 8.3     | 10.2  | 23.0 | 8.1  | 7.9  | 4.1     | 43.1  | 46.4 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 |                 | 0.0060          | 0.0181          | 0.0480          | 0.0551          | 0.0634          | 0.0728          |

Fineness Modulus

0.05



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: 10912915  
 Location: 504512  
 Sample Number: L0912915-06  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 26.01                       | 0.00         | #4                 | 521.80                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 484.91                  | 484.81               | 99.5          | 0.5              |
|                             |              | #20                | 405.47                  | 405.42               | 99.3          | 0.7              |
|                             |              | #40                | 363.04                  | 361.28               | 92.5          | 7.5              |
|                             |              | #60                | 366.74                  | 366.16               | 90.3          | 9.7              |
|                             |              | #140               | 343.31                  | 342.82               | 88.4          | 11.6             |
|                             |              | #200               | 345.53                  | 345.25               | 87.4          | 12.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 87.4  
 Weight of hydrometer sample = 26.01  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0342         | 63.4          | 36.6             |
| 5.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0218         | 58.0          | 42.0             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 52.6          | 47.4             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 47.2          | 52.8             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 47.2          | 52.8             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 41.8          | 58.2             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 41.8          | 58.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 0.2     | 5.2  | 3.8  | 1.5  | 7.0     | 17.7  | 19.6 | 7.6  | 7.4  | 3.8     | 38.4  | 43.4 |

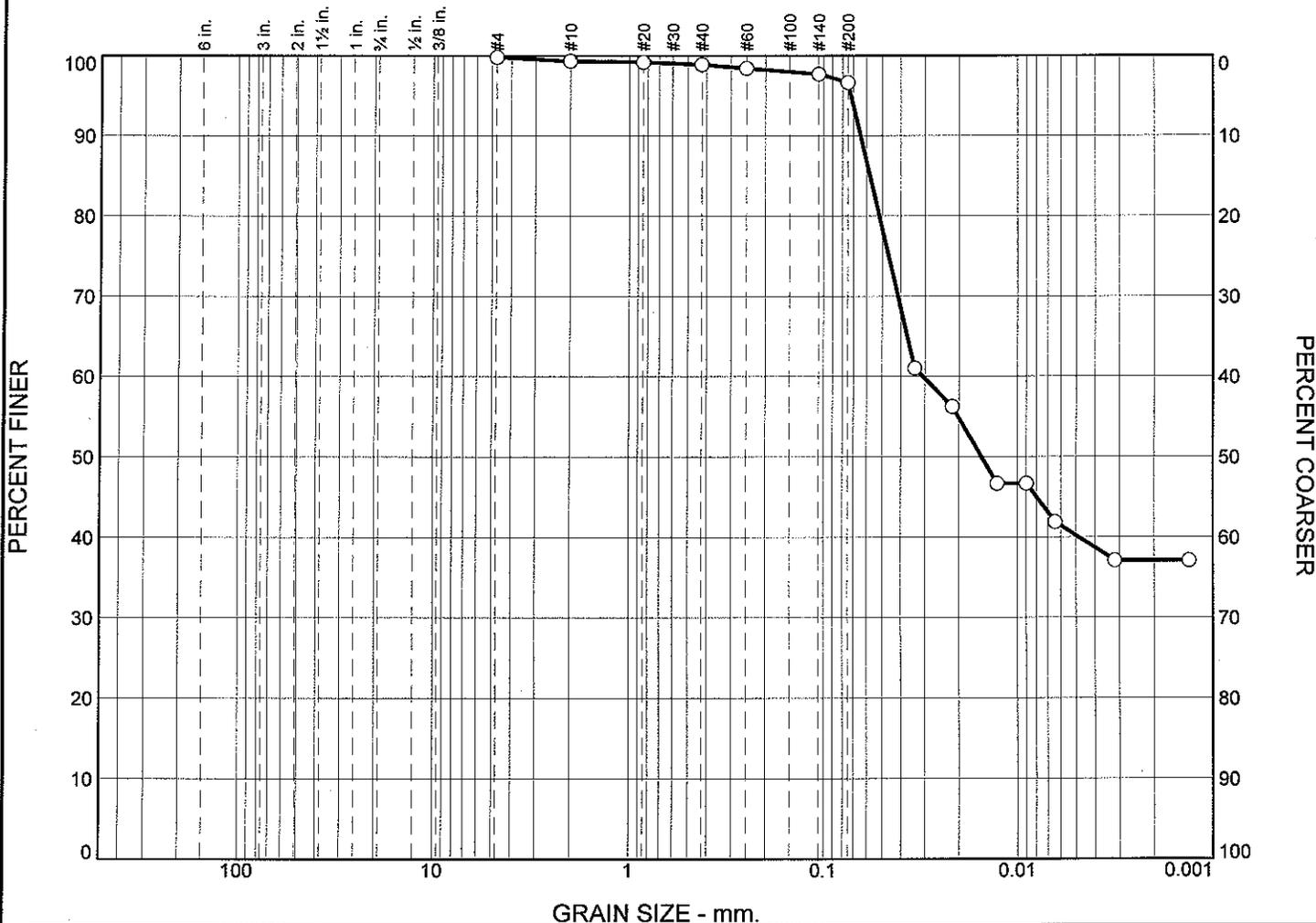
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 |                 | 0.0108          | 0.0258          | 0.0590          | 0.0694          | 0.2169          | 0.5467          |

Fineness  
Modulus

0.25

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |               |      |         | % Clay |  |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|---------------|------|---------|--------|--|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med.          | Fine | V. Fine |        |  |
| <input type="radio"/>               |            |           |                 | 0.4             | 0.1             | 0.2             | 0.6             | 0.5             | 9.4            | 28.4           | 9.7           | 5.7  | 6.2     | 38.5   |  |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |               |      |         |        |  |
| <input type="radio"/>               |            |           | 0.0578          | 0.0307          | 0.0153          |                 |                 |                 |                |                |               |      |         |        |  |
| <b>Material Description</b>         |            |           |                 |                 |                 |                 |                 |                 |                | <b>USCS</b>    | <b>AASHTO</b> |      |         |        |  |
| <input type="radio"/>               |            |           |                 |                 |                 |                 |                 |                 |                |                |               |      |         |        |  |

**Project No.** I0912915      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 504513      **Sample Number:** L0912915-07  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504513

Sample Number: L0912915-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 32.42                       | 0.00         | #4                 | 520.87                  | 520.81               | 99.8          | 0.2              |
|                             |              | #10                | 482.27                  | 482.11               | 99.3          | 0.7              |
|                             |              | #20                | 411.13                  | 411.09               | 99.2          | 0.8              |
|                             |              | #40                | 377.96                  | 377.86               | 98.9          | 1.1              |
|                             |              | #60                | 369.99                  | 369.84               | 98.4          | 1.6              |
|                             |              | #140               | 347.40                  | 347.17               | 97.7          | 2.3              |
|                             |              | #200               | 346.86                  | 346.51               | 96.6          | 3.4              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 96.6

Weight of hydrometer sample = 32.42

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0 | 13.9       | 0.0339         | 61.0          | 39.0             |
| 5.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0216         | 56.2          | 43.8             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 46.7          | 53.3             |
| 30.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0090         | 46.7          | 53.3             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 41.9          | 58.1             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 37.1          | 62.9             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 37.1          | 62.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 0.1     | 0.2  | 0.6  | 0.5  | 9.4     | 10.8  | 28.4 | 9.7  | 5.7  | 6.2     | 50.0  | 38.5 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0153 | 0.0307 | 0.0517 | 0.0578 | 0.0647 | 0.0723 |

Fineness Modulus

0.06

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: 10912915  
 Location: 504526  
 Sample Number: L0912915-08  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 47.55                       | 0.00         | #4                 | 521.81                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 484.89                  | 484.81               | 99.7          | 0.3              |
|                             |              | #20                | 405.50                  | 405.42               | 99.6          | 0.4              |
|                             |              | #40                | 362.37                  | 361.28               | 97.3          | 2.7              |
|                             |              | #60                | 366.78                  | 366.16               | 96.0          | 4.0              |
|                             |              | #140               | 343.34                  | 342.82               | 94.9          | 5.1              |
|                             |              | #200               | 345.60                  | 345.25               | 94.2          | 5.8              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 94.2  
 Weight of hydrometer sample = 47.55  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0150         | 1.0157            | 0.0128 | 12.0 | 13.1       | 0.0329         | 50.1          | 49.9             |
| 5.00                | 25.0            | 1.0140         | 1.0147            | 0.0128 | 11.0 | 13.4       | 0.0210         | 46.9          | 53.1             |
| 15.00               | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0  | 13.9       | 0.0124         | 40.5          | 59.5             |
| 30.00               | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0  | 14.2       | 0.0088         | 37.4          | 62.6             |
| 60.00               | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0  | 14.4       | 0.0063         | 34.2          | 65.8             |
| 250.00              | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0  | 14.7       | 0.0031         | 31.0          | 69.0             |
| 1440.00             | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0  | 15.0       | 0.0013         | 27.8          | 72.2             |

## Fractional Components

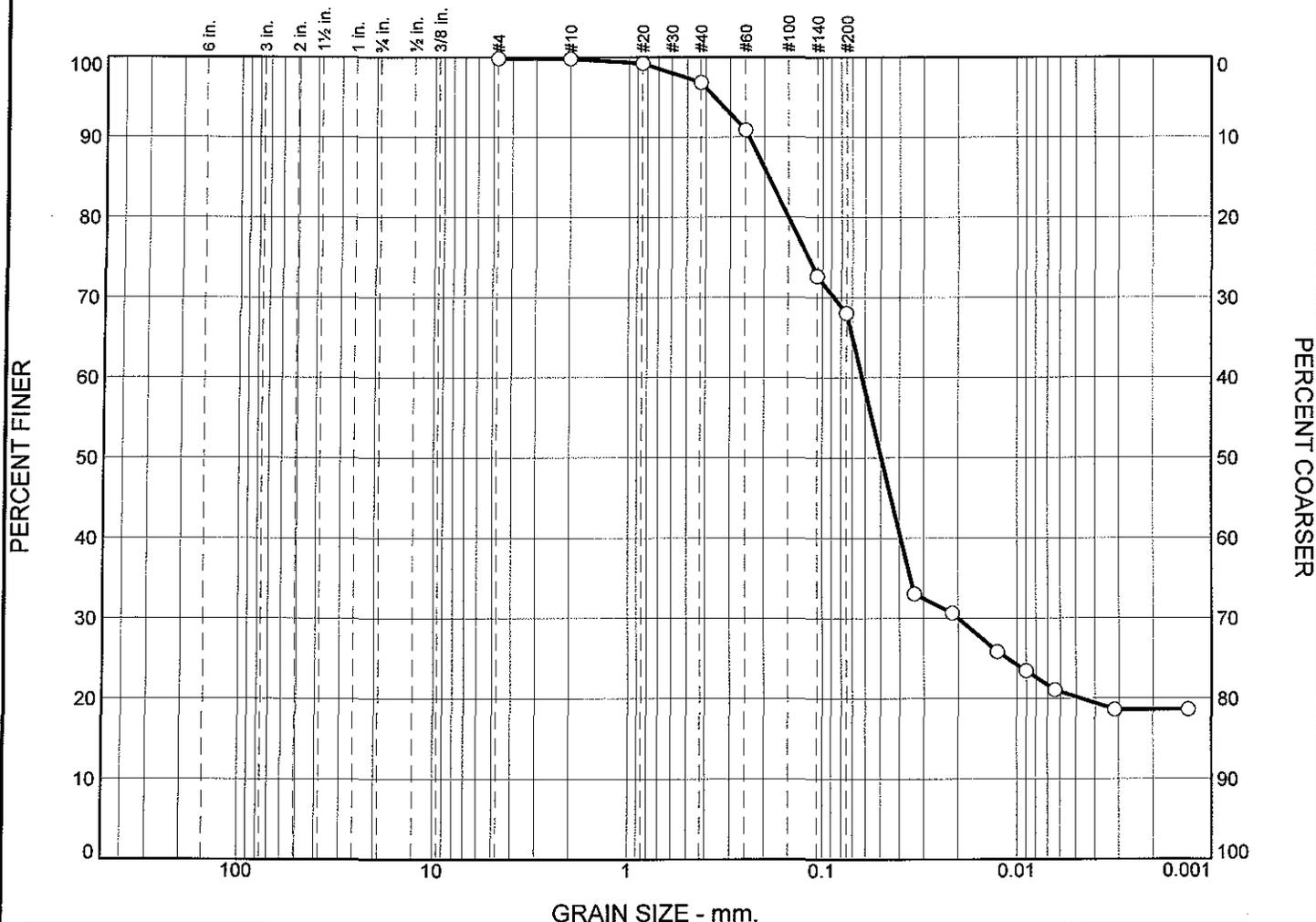
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.2      | 0.1     | 1.8  | 1.8  | 0.9  | 10.7    | 15.3  | 34.7 | 6.4  | 7.1  | 4.2     | 52.4 | 32.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0024          | 0.0325          | 0.0396          | 0.0576          | 0.0632          | 0.0694          | 0.1156          |

Fineness  
Modulus

0.10

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      | % Silt  |      |      |      | % Clay |         |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|------|------|---------|------|------|------|--------|---------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| <input type="radio"/>               |            |           |           | 0.0        | 0.5     | 1.9    | 6.5  | 14.8 | 16.0    | 27.5 | 4.8  | 5.4  | 3.1    | 19.3    |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu   |      |      |        |         |
| <input type="radio"/>               |            |           | 0.1895    | 0.0624     | 0.0495  | 0.0199 |      |      |         |      |      |      |        |         |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** 10912915      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 504611      **Sample Number:** L0912915-09  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504611

Sample Number: L0912915-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.43                       | 0.00         | #4                 | 520.88                  | 520.81               | 99.8          | 0.2              |
|                             |              | #10                | 482.13                  | 482.11               | 99.8          | 0.2              |
|                             |              | #20                | 411.36                  | 411.09               | 99.2          | 0.8              |
|                             |              | #40                | 378.94                  | 377.86               | 96.8          | 3.2              |
|                             |              | #60                | 372.54                  | 369.84               | 90.9          | 9.1              |
|                             |              | #140               | 355.46                  | 347.17               | 72.6          | 27.4             |
|                             |              | #200               | 348.61                  | 346.51               | 68.0          | 32.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 68.0

Weight of hydrometer sample = 45.43

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0130         | 1.0137            | 0.0128 | 10.0 | 13.6       | 0.0336         | 33.1          | 66.9             |
| 5.00                | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0  | 13.9       | 0.0214         | 30.7          | 69.3             |
| 15.00               | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0  | 14.4       | 0.0126         | 25.8          | 74.2             |
| 30.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0  | 14.7       | 0.0090         | 23.4          | 76.6             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0  | 15.0       | 0.0064         | 21.0          | 79.0             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0  | 15.2       | 0.0032         | 18.6          | 81.4             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0  | 15.2       | 0.0013         | 18.6          | 81.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.0      | 0.5     | 1.9  | 6.5  | 14.8 | 16.0    | 39.7  | 27.5 | 4.8  | 5.4  | 3.1     | 40.8  | 19.3 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0047          | 0.0199          | 0.0495          | 0.0624          | 0.1498          | 0.1895          | 0.2398          | 0.3609          |

Fineness Modulus

0.30

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504612

Sample Number: L0912915-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 38.89                       | 0.00         | #4                 | 521.79                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 484.88                  | 484.81               | 99.8          | 0.2              |
|                             |              | #20                | 405.78                  | 405.42               | 98.8          | 1.2              |
|                             |              | #40                | 362.87                  | 361.28               | 94.8          | 5.2              |
|                             |              | #60                | 368.09                  | 366.16               | 89.8          | 10.2             |
|                             |              | #140               | 347.71                  | 342.82               | 77.2          | 22.8             |
|                             |              | #200               | 346.60                  | 345.25               | 73.7          | 26.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 73.7

Weight of hydrometer sample = 38.59

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0 | 13.9       | 0.0339         | 39.1          | 60.9             |
| 5.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0216         | 36.1          | 63.9             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 29.9          | 70.1             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 26.9          | 73.1             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 26.9          | 73.1             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 23.8          | 76.2             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 23.8          | 76.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.8     | 3.3  | 5.9  | 10.2 | 13.8    | 34.0  | 27.3 | 6.2  | 5.4  | 2.2     | 41.1  | 24.7 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0128 | 0.0435 | 0.0547 | 0.1282 | 0.1803 | 0.2556 | 0.4431 |

Fineness Modulus

0.30



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** 10912915  
**Location:** 504613  
**Sample Number:** L0912915-11  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.66                       | 0.00         | #4                 | 520.84                  | 520.81               | 99.9          | 0.1              |
|                             |              | #10                | 482.22                  | 482.11               | 99.7          | 0.3              |
|                             |              | #20                | 411.40                  | 411.09               | 99.0          | 1.0              |
|                             |              | #40                | 378.21                  | 377.86               | 98.2          | 1.8              |
|                             |              | #60                | 371.31                  | 369.84               | 95.0          | 5.0              |
|                             |              | #140               | 352.67                  | 347.17               | 83.0          | 17.0             |
|                             |              | #200               | 348.20                  | 346.51               | 79.3          | 20.7             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 79.3  
 Weight of hydrometer sample = 45.66  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0 | 13.9       | 0.0339         | 35.6          | 64.4             |
| 5.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0216         | 32.8          | 67.2             |
| 15.00               | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0126         | 30.0          | 70.0             |
| 30.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0090         | 27.2          | 72.8             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 24.4          | 75.6             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 21.6          | 78.4             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 21.6          | 78.4             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 0.6     | 0.7  | 3.4  | 9.7  | 16.1    | 30.5  | 34.2 | 3.9  | 5.1  | 3.6     | 46.8  | 22.4 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0127 | 0.0441 | 0.0528 | 0.0802 | 0.1224 | 0.1747 | 0.2495 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.18                    |



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: 10912915  
 Location: 504626  
 Sample Number: L0912915-12  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 67.06                       | 0.00         | #4                 | 521.86                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.05                  | 484.81               | 99.5          | 0.5              |
|                             |              | #20                | 405.79                  | 405.42               | 99.0          | 1.0              |
|                             |              | #40                | 362.87                  | 361.28               | 96.6          | 3.4              |
|                             |              | #60                | 369.52                  | 366.16               | 91.6          | 8.4              |
|                             |              | #140               | 350.58                  | 342.82               | 80.0          | 20.0             |
|                             |              | #200               | 347.11                  | 345.25               | 77.2          | 22.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 77.2  
 Weight of hydrometer sample = 67.06  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0160         | 1.0167            | 0.0128 | 13.0 | 12.9       | 0.0326         | 31.0          | 69.0             |
| 5.00                | 25.0            | 1.0140         | 1.0147            | 0.0128 | 11.0 | 13.4       | 0.0210         | 27.3          | 72.7             |
| 15.00               | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0  | 13.9       | 0.0124         | 23.6          | 76.4             |
| 30.00               | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0  | 14.4       | 0.0089         | 19.9          | 80.1             |
| 60.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0  | 14.7       | 0.0064         | 18.0          | 82.0             |
| 250.00              | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0  | 14.7       | 0.0031         | 18.0          | 82.0             |
| 1440.00             | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0  | 15.0       | 0.0013         | 16.2          | 83.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.3      | 0.4     | 2.0  | 5.5  | 9.4  | 15.1    | 32.4  | 36.5 | 5.4  | 6.0  | 1.2     | 49.1 | 18.0  |

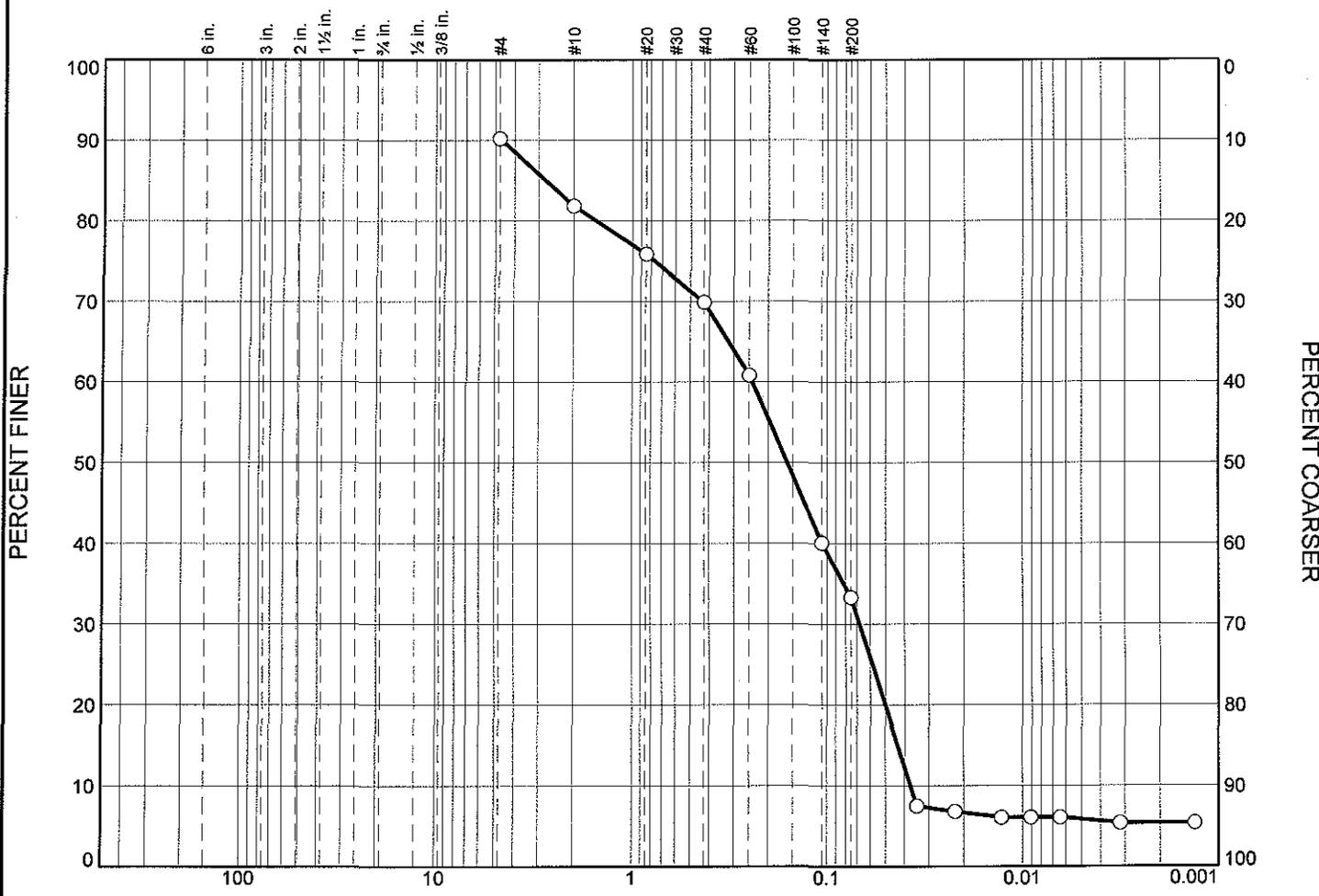
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0090          | 0.0290          | 0.0459          | 0.0550          | 0.1060          | 0.1535          | 0.2224          | 0.3593          |

Fineness  
Modulus

0.26

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |     |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|--------|------|------|---------|--------|-----|
|   |          |   |         |   |         |   |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |     |
| ○ |          |   |         |   |         |   | 6.7      | 4.8     | 5.7  | 10.5 | 16.7 | 16.9    | 19.9   | 1.0  | 0.2  | 0.5     |        | 5.6 |

| ⊗ | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 2.7709          | 0.2417          | 0.1598          | 0.0679          | 0.0433          | 0.0372          | 0.51           | 6.49           |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> 10912915 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 504711 <b>Sample Number:</b> L0912915-13 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504711

Sample Number: L0912915-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 76.91                       | 0.00         | #4                 | 528.34                  | 520.81               | 90.2          | 9.8              |
|                             |              | #10                | 488.54                  | 482.11               | 81.8          | 18.2             |
|                             |              | #20                | 415.70                  | 411.09               | 75.9          | 24.1             |
|                             |              | #40                | 382.47                  | 377.86               | 69.9          | 30.1             |
|                             |              | #60                | 376.80                  | 369.84               | 60.8          | 39.2             |
|                             |              | #140               | 363.12                  | 347.17               | 40.1          | 59.9             |
|                             |              | #200               | 351.72                  | 346.51               | 33.3          | 66.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 33.3

Weight of hydrometer sample = 76.91

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0345         | 7.5           | 92.5             |
| 5.00                | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0220         | 6.8           | 93.2             |
| 15.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0128         | 6.1           | 93.9             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 6.1           | 93.9             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 6.1           | 93.9             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 5.4           | 94.6             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 5.4           | 94.6             |

## Fractional Components

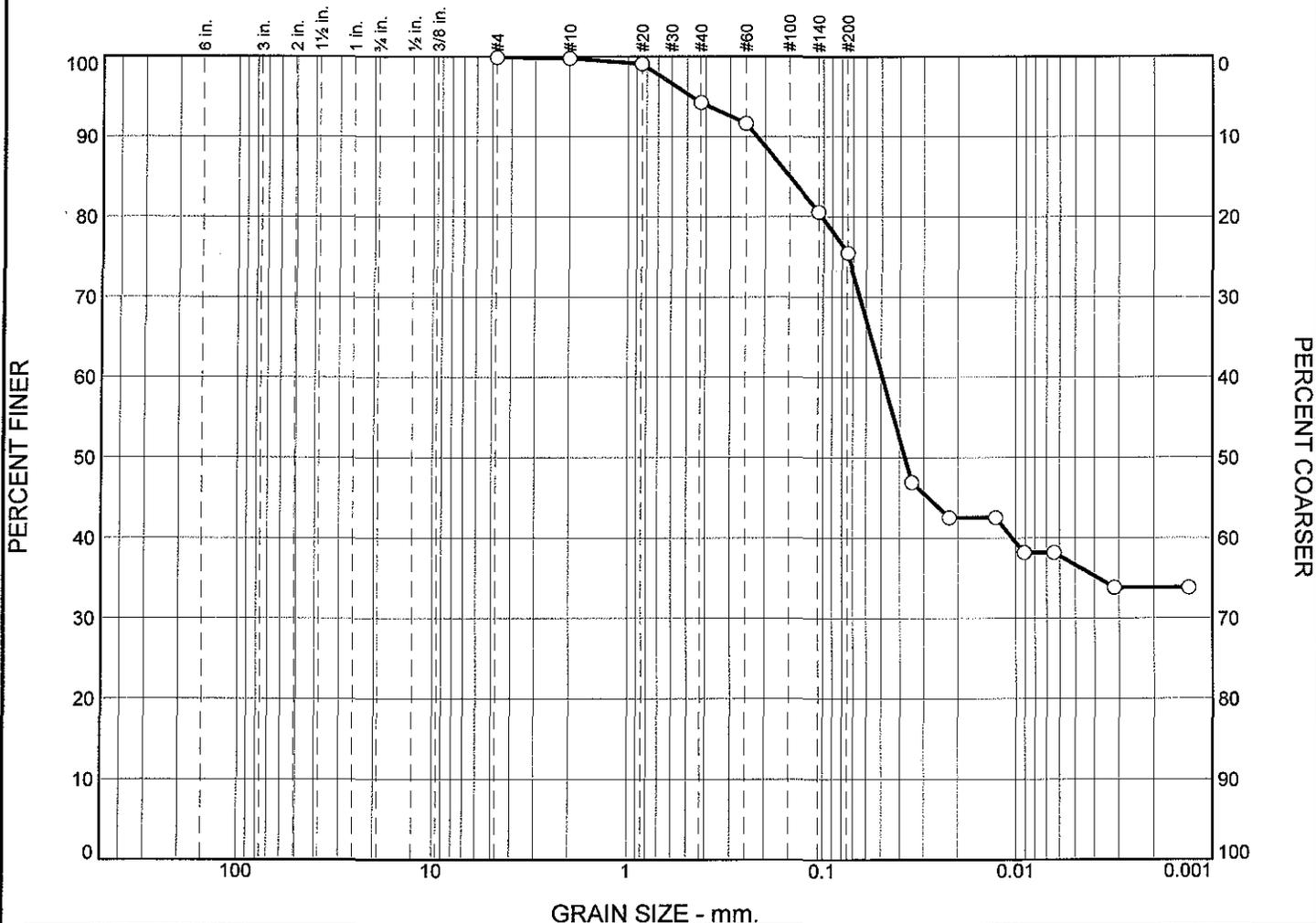
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.7      | 4.8     | 5.7  | 10.5 | 16.7 | 16.9    | 54.6  | 19.9 | 1.0  | 0.2  | 0.5     | 21.6  | 5.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0372          | 0.0433          | 0.0503          | 0.0679          | 0.1598          | 0.2417          | 1.5360          | 2.7709          | 4.6482          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.63             | 6.49           | 0.51           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
|            |           |           | 0.1        | 0.6     | 3.8  | 3.7  | 9.0  | 13.9    | 22.9   | 3.4  | 4.3  | 3.1     | 35.1   |

| LL | PL | D85    | D60    | D50    | D30 | D15 | D10 | Cc | Cu |
|----|----|--------|--------|--------|-----|-----|-----|----|----|
|    |    | 0.1491 | 0.0493 | 0.0375 |     |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
|                      |      |        |

**Project No.** 10912915      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
**Source of Sample:** 504712      **Sample Number:** L0912915-14  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504712

Sample Number: L0912915-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 27.79                       | 0.00         | #4                 | 521.80                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 484.84                  | 484.81               | 99.8          | 0.2              |
|                             |              | #20                | 405.62                  | 405.42               | 99.1          | 0.9              |
|                             |              | #40                | 362.62                  | 361.28               | 94.2          | 5.8              |
|                             |              | #60                | 366.88                  | 366.16               | 91.7          | 8.3              |
|                             |              | #140               | 345.89                  | 342.82               | 80.6          | 19.4             |
|                             |              | #200               | 346.67                  | 345.25               | 75.5          | 24.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 75.5

Weight of hydrometer sample = 27.79

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0345         | 46.9          | 53.1             |
| 5.00                | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0220         | 42.5          | 57.5             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 42.5          | 57.5             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 38.2          | 61.8             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 38.2          | 61.8             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 33.8          | 66.2             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 33.8          | 66.2             |

## Fractional Components

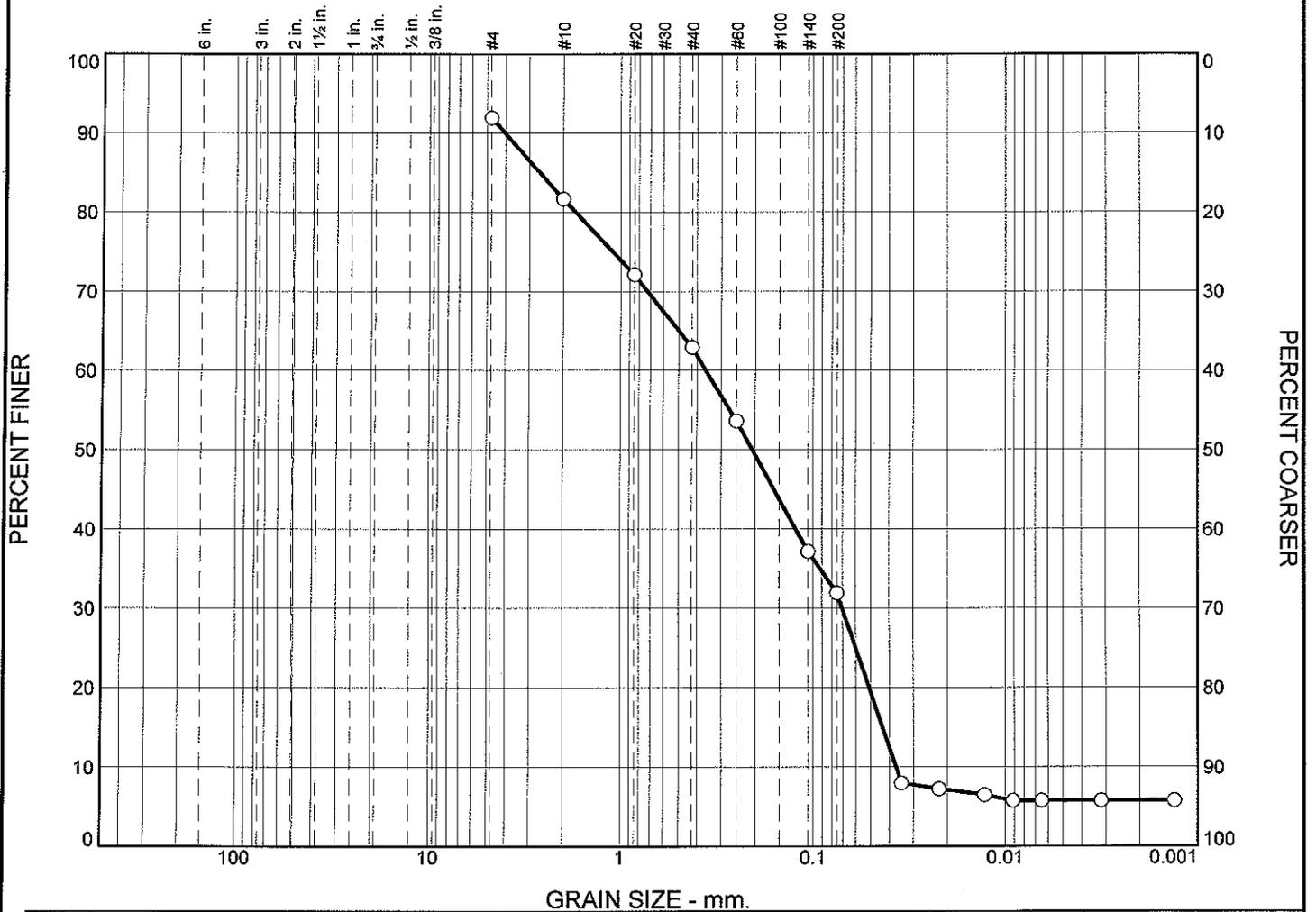
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.6     | 3.8  | 3.7  | 9.0  | 13.9    | 31.0  | 22.9 | 3.4  | 4.3  | 3.1     | 33.7  | 35.1 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 |                 | 0.0375          | 0.0493          | 0.1017          | 0.1491          | 0.2199          | 0.4739          |

Fineness Modulus

0.27

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 | % Silt  |                 |      |                 | % Clay |                |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|--------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |        | V. Fine        |  |                |
| ○ |          |   |         |   |                 |   | 8.2             | 7.8     | 8.8             | 11.5 | 13.3            | 14.0    | 18.5            | 1.1  | 1.0             |        | 5.7            |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 2.6503          |   | 0.3601          |         | 0.2070          |      | 0.0705          |         | 0.0434          |      | 0.0369          |        | 0.37           |  | 9.76           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** 10912915     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring

○ **Source of Sample:** 504713     **Sample Number:** L0912915-15

**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: 10912915  
 Location: 504713  
 Sample Number: L0912915-15  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.24                       | 0.00         | #4                 | 526.40                  | 520.81               | 91.9          | 8.1              |
|                             |              | #10                | 489.22                  | 482.11               | 81.7          | 18.3             |
|                             |              | #20                | 417.72                  | 411.09               | 72.1          | 27.9             |
|                             |              | #40                | 384.22                  | 377.86               | 62.9          | 37.1             |
|                             |              | #60                | 376.26                  | 369.84               | 53.6          | 46.4             |
|                             |              | #140               | 358.57                  | 347.17               | 37.2          | 62.8             |
|                             |              | #200               | 350.14                  | 346.51               | 31.9          | 68.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 31.9  
 Weight of hydrometer sample = 69.24  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0345         | 8.0           | 92.0             |
| 5.00                | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0220         | 7.2           | 92.8             |
| 15.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0128         | 6.5           | 93.5             |
| 30.00               | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0092         | 5.7           | 94.3             |
| 60.00               | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0065         | 5.7           | 94.3             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 5.7           | 94.3             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 5.7           | 94.3             |

## Fractional Components

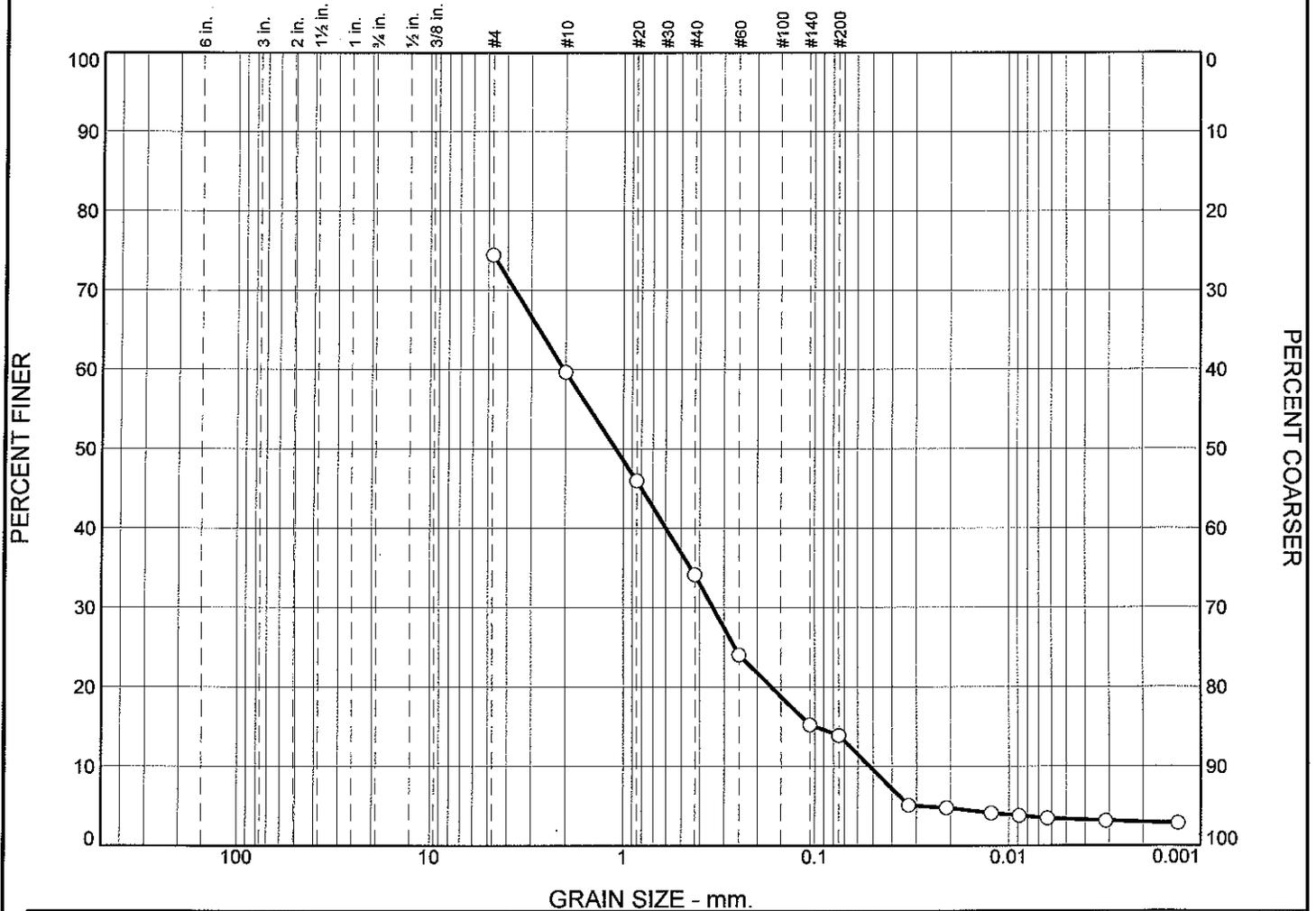
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 8.2      | 7.8     | 8.8  | 11.5 | 13.3 | 14.0    | 55.4  | 18.5 | 1.1  | 1.0  |         | 20.6 | 5.7   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0369          | 0.0434          | 0.0510          | 0.0705          | 0.2070          | 0.3601          | 1.7246          | 2.6503          | 4.0384          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.81             | 9.76           | 0.37           |

Alpha Analytical

# Particle Size Distribution Report



|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |           | 11.9       | 11.0    | 11.7   | 12.9   | 7.1    | 5.0     | 6.9    | 0.6  | 0.7  | 0.5     | 3.2    |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| <input type="radio"/>               |            |           |           | 2.0424     | 1.0943  | 0.3422 | 0.1003 | 0.0521 | 1.10    | 39.17  |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** 10912915      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 504726      **Sample Number:** L0912915-16  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504726

Sample Number: L0912915-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.08                       | 0.00         | #4                 | 539.42                  | 521.77               | 74.4          | 25.6             |
|                             |              | #10                | 495.04                  | 484.81               | 59.6          | 40.4             |
|                             |              | #20                | 414.87                  | 405.42               | 46.0          | 54.0             |
|                             |              | #40                | 369.45                  | 361.28               | 34.1          | 65.9             |
|                             |              | #60                | 373.15                  | 366.16               | 24.0          | 76.0             |
|                             |              | #140               | 348.90                  | 342.82               | 15.2          | 84.8             |
|                             |              | #200               | 346.17                  | 345.25               | 13.9          | 86.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 13.9

Weight of hydrometer sample = 69.08

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0150         | 1.0157            | 0.0128 | 12.0 | 13.1       | 0.0329         | 5.1           | 94.9             |
| 5.00                | 25.0            | 1.0140         | 1.0147            | 0.0128 | 11.0 | 13.4       | 0.0210         | 4.8           | 95.2             |
| 15.00               | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0  | 13.9       | 0.0124         | 4.1           | 95.9             |
| 30.00               | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0  | 14.2       | 0.0088         | 3.8           | 96.2             |
| 60.00               | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0  | 14.4       | 0.0063         | 3.5           | 96.5             |
| 250.00              | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0  | 14.7       | 0.0031         | 3.1           | 96.9             |
| 1440.00             | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0  | 15.0       | 0.0013         | 2.8           | 97.2             |

## Fractional Components

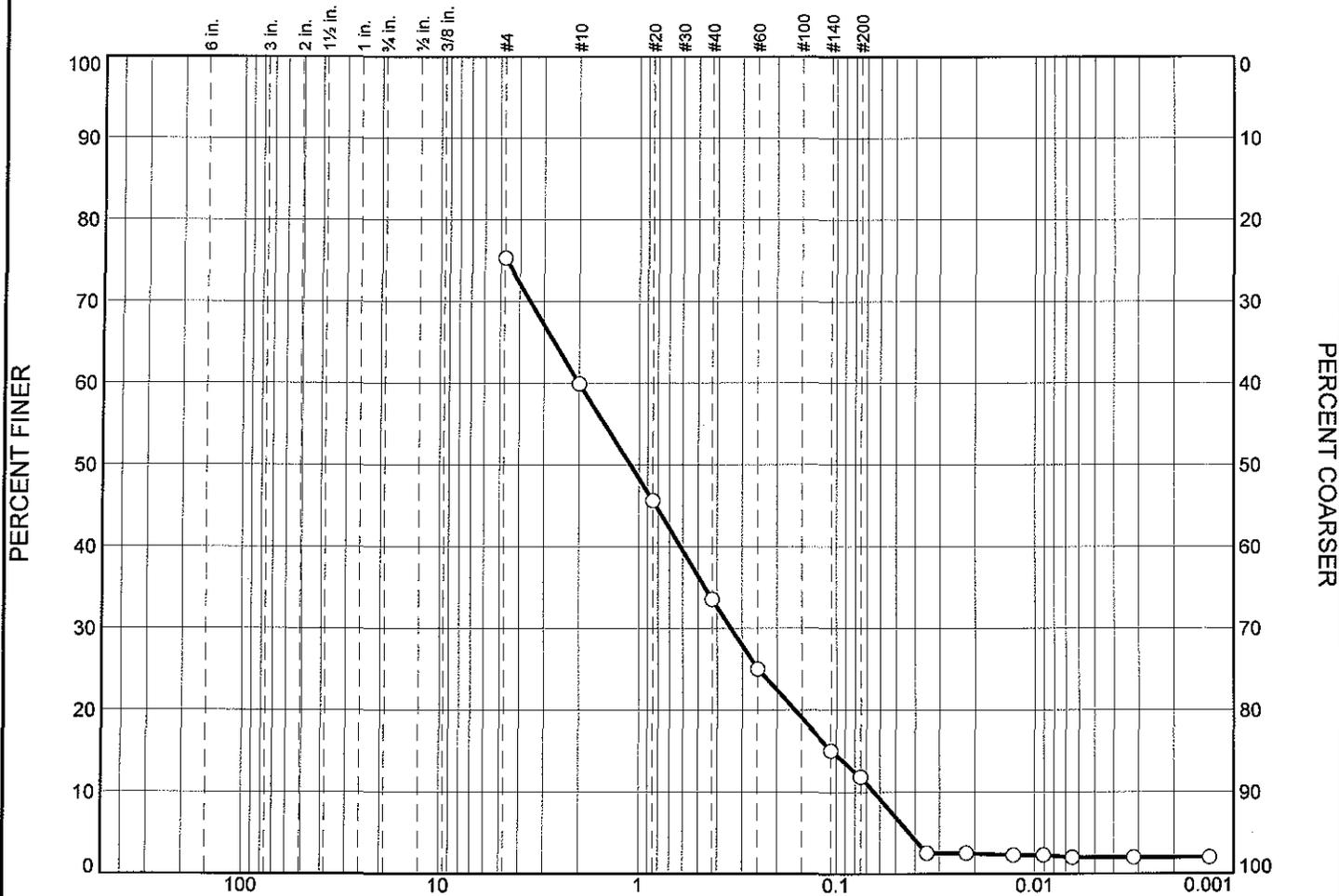
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 11.9     | 11.0    | 11.7 | 12.9 | 7.1  | 5.0     | 47.7  | 6.9  | 0.6  | 0.7  | 0.5     | 8.7   | 3.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0521          | 0.1003          | 0.1690          | 0.3422          | 1.0943          | 2.0424          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.26             | 39.17          | 1.10           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |        |      |        | % Silt  |        |      |        | % Clay |         |       |
|---|----------|---|---------|---|---------|---|----------|---------|--------|------|--------|---------|--------|------|--------|--------|---------|-------|
|   |          |   |         |   |         |   |          | V. Crs. | Crs.   | Med. | Fine   | V. Fine | Crs.   | Med. | Fine   |        | V. Fine |       |
| ○ |          |   |         |   |         |   | 12.3     | 11.6    | 12.0   | 11.3 | 8.1    | 7.3     | 7.1    | 0.1  | 0.2    | 0.2    | 2.0     |       |
| × | LL       |   | PL      |   | D85     |   | D60      |         | D50    |      | D30    |         | D15    |      | D10    |        | Cc      | Cu    |
| ○ |          |   |         |   |         |   | 2.0126   |         | 1.1055 |      | 0.3413 |         | 0.1057 |      | 0.0644 |        | 0.90    | 31.24 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912915     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504811     <b>Sample Number:</b> L0912915-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504811

Sample Number: L0912915-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 73.02                       | 0.00         | #4                 | 538.84                  | 520.81               | 75.3          | 24.7             |
|                             |              | #10                | 493.37                  | 482.11               | 59.9          | 40.1             |
|                             |              | #20                | 421.51                  | 411.09               | 45.6          | 54.4             |
|                             |              | #40                | 386.70                  | 377.86               | 33.5          | 66.5             |
|                             |              | #60                | 376.04                  | 369.84               | 25.0          | 75.0             |
|                             |              | #140               | 354.47                  | 347.17               | 15.0          | 85.0             |
|                             |              | #200               | 348.83                  | 346.51               | 11.8          | 88.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 11.8

Weight of hydrometer sample = 73.02

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0348         | 2.5           | 97.5             |
| 5.00                | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0220         | 2.5           | 97.5             |
| 15.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0128         | 2.3           | 97.7             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 2.3           | 97.7             |
| 60.00               | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0065         | 2.0           | 98.0             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 2.0           | 98.0             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 2.0           | 98.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 12.3     | 11.6    | 12.0 | 11.3 | 8.1  | 7.3     | 50.3  | 7.1  | 0.1  | 0.2  | 0.2     | 7.6   | 2.0  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80 | D85 | D90 | D95 |
|--------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 0.0644 | 0.1057 | 0.1625 | 0.3413 | 1.1055 | 2.0126 |     |     |     |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 3.24             | 31.24          | 0.90           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: 10912915  
 Location: 504812  
 Sample Number: L0912915-18  
 USCS Classification: SP  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 125.96  
 Tare Wt. = 4.58

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 90.13                       | 0.00         | #4                 | 565.23                  | 521.77               | 51.8          | 48.2             |
|                             |              | #10                | 502.86                  | 484.81               | 31.8          | 68.2             |
|                             |              | #20                | 414.07                  | 405.42               | 22.2          | 77.8             |
|                             |              | #40                | 368.47                  | 361.28               | 14.2          | 85.8             |
|                             |              | #60                | 371.54                  | 366.16               | 8.2           | 91.8             |
|                             |              | #140               | 346.86                  | 342.82               | 3.7           | 96.3             |
|                             |              | #200               | 345.86                  | 345.25               | 3.1           | 96.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 3.1  
 Weight of hydrometer sample = 90.13  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0342         | 0.6           | 99.4             |
| 5.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0218         | 0.6           | 99.4             |
| 15.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0128         | 0.5           | 99.5             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 0.5           | 99.5             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 0.5           | 99.5             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 0.4           | 99.6             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 0.4           | 99.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 16.0     | 7.8     | 8.0  | 7.8  | 3.6  | 2.1     | 29.3  | 1.9  | 0.1  | 0.0  | 0.1     | 2.1   | 0.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.2931          | 0.4564          | 0.7047          | 1.7104          | 4.3983          |                 |                 |                 |                 |                 |

| Fineness Modulus |
|------------------|
| 4.53             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: 10912915  
 Location: 504813  
 Sample Number: L0912915-19  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 131.36                      | 0.00         | #4                 | 520.81                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 483.11                  | 482.11               | 99.2          | 0.8              |
|                             |              | #20                | 412.03                  | 411.09               | 98.5          | 1.5              |
|                             |              | #40                | 378.75                  | 377.86               | 97.8          | 2.2              |
|                             |              | #60                | 371.46                  | 369.84               | 96.6          | 3.4              |
|                             |              | #140               | 355.47                  | 347.17               | 90.3          | 9.7              |
|                             |              | #200               | 350.18                  | 346.51               | 87.5          | 12.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 87.5  
 Weight of hydrometer sample = 131.36  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0351         | 9.4           | 90.6             |
| 5.00                | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0222         | 9.4           | 90.6             |
| 15.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0128         | 9.4           | 90.6             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 9.4           | 90.6             |
| 60.00               | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0065         | 8.3           | 91.7             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 8.3           | 91.7             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 8.3           | 91.7             |

## Fractional Components

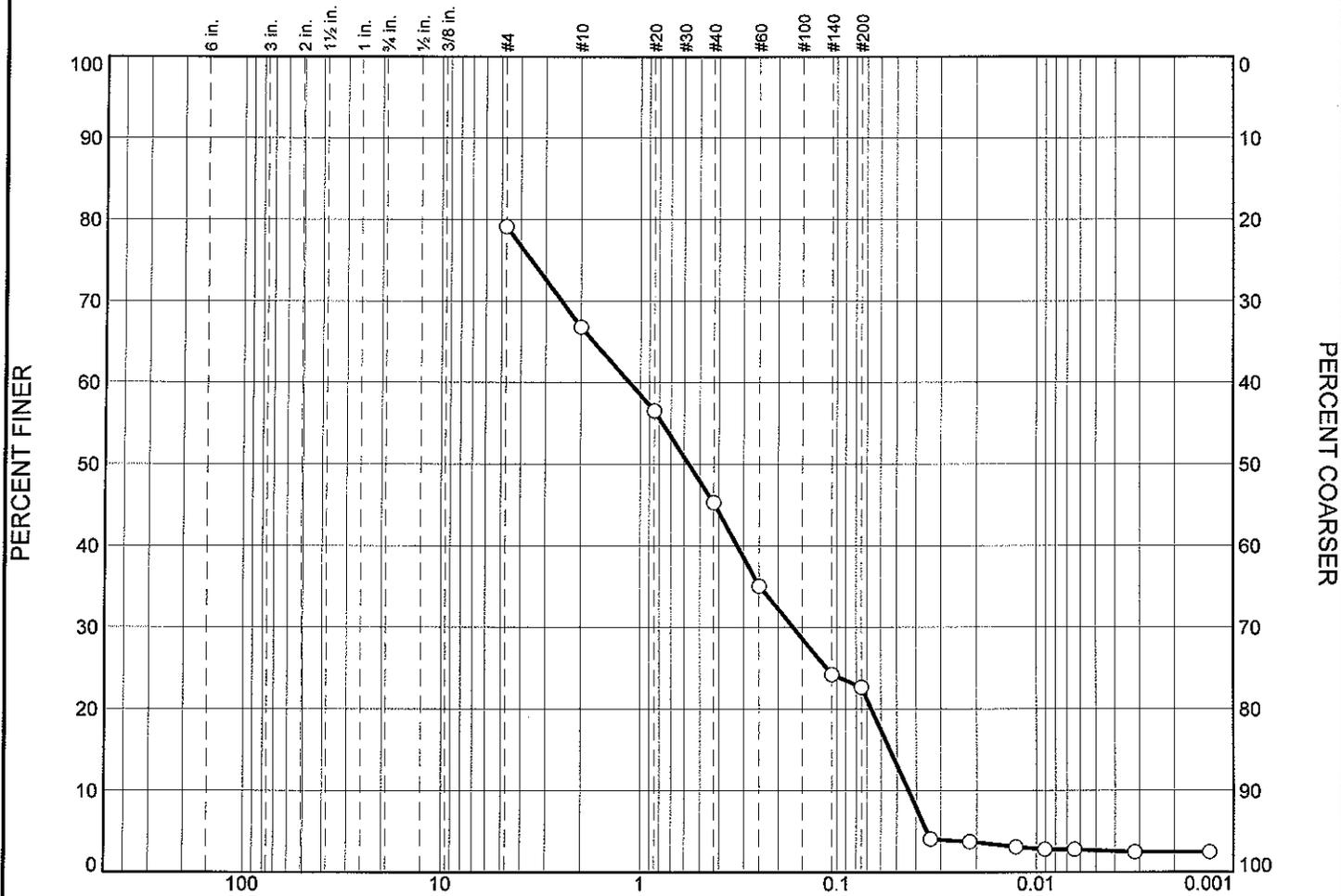
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.2     | 0.6      | 0.5     | 0.7  | 1.4  | 5.1  | 22.8    | 30.5  | 59.3 | 0.0  | 0.5  | 0.6     | 60.4  | 8.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0354          | 0.0371          | 0.0390          | 0.0429          | 0.0521          | 0.0574          | 0.0697          | 0.0732          | 0.1022          | 0.2008          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.14             | 1.62           | 0.91           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| ○ |          |         |         | 9.9      | 8.3     | 10.6 | 12.8 | 8.8  | 7.9     | 14.4 | 0.6  | 0.6  | 0.2     | 2.6  |

| × | LL | PL | D85 | D60    | D50    | D30    | D15    | D10    | Cc   | Cu    |
|---|----|----|-----|--------|--------|--------|--------|--------|------|-------|
| ○ |    |    |     | 1.1366 | 0.5688 | 0.1675 | 0.0541 | 0.0437 | 0.57 | 26.03 |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|  |  |
|--|--|
| <b>Project No.</b> 10912915 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 504826 <b>Sample Number:</b> L0912915-20 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504826

Sample Number: L0912915-20

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 114.15                      | 0.00         | #4                 | 545.61                  | 521.77               | 79.1          | 20.9             |
|                             |              | #10                | 498.89                  | 484.81               | 66.8          | 33.2             |
|                             |              | #20                | 417.14                  | 405.42               | 56.5          | 43.5             |
|                             |              | #40                | 374.11                  | 361.28               | 45.3          | 54.7             |
|                             |              | #60                | 377.82                  | 366.16               | 35.1          | 64.9             |
|                             |              | #140               | 355.20                  | 342.82               | 24.2          | 75.8             |
|                             |              | #200               | 347.03                  | 345.25               | 22.7          | 77.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 22.7

Weight of hydrometer sample = 114.15

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0 | 13.9       | 0.0339         | 4.1           | 95.9             |
| 5.00                | 25.0            | 1.0110         | 1.0117            | 0.0128 | 8.0 | 14.2       | 0.0216         | 3.7           | 96.3             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 3.1           | 96.9             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 2.8           | 97.2             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 2.8           | 97.2             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 2.5           | 97.5             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 2.5           | 97.5             |

## Fractional Components

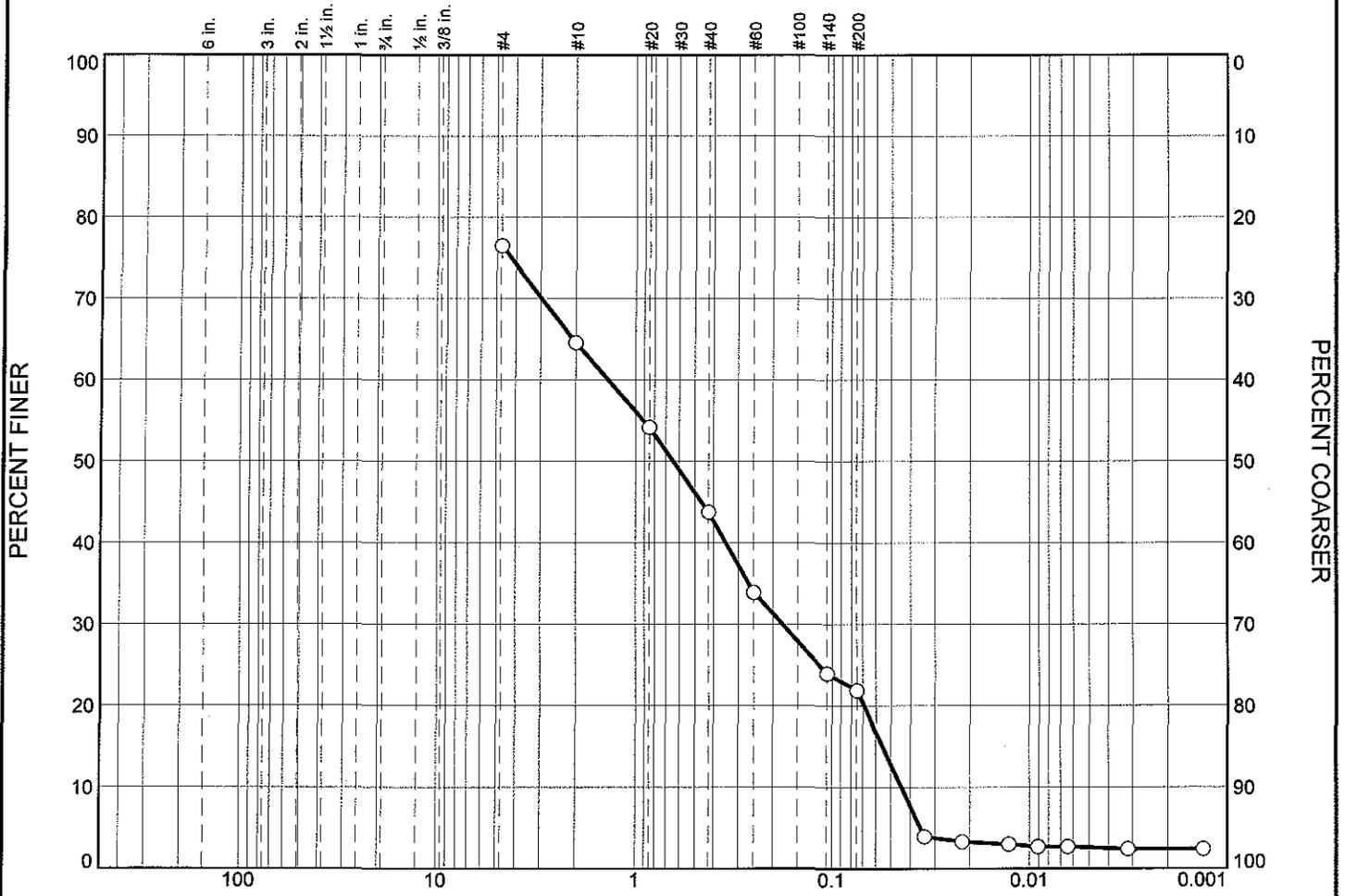
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 9.9      | 8.3     | 10.6 | 12.8 | 8.8  | 7.9     | 48.4  | 14.4 | 0.6  | 0.6  | 0.2     | 15.8  | 2.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0437          | 0.0541          | 0.0670          | 0.1675          | 0.5688          | 1.1366          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.73             | 26.03          | 0.57           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |                 | 9.6             | 8.5             | 9.9             | 12.3            | 8.1             | 8.1            | 13.9           | 0.7  | 0.4  | 0.2     | 2.5    |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           |                 | 1.3725          | 0.6443          | 0.1788          | 0.0553          | 0.0443          | 0.53           | 30.96          |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** 10912915      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 504826      **Sample Number:** WG383817-1  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912915

Location: 504826

Sample Number: WG383817-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 113.76                      | 0.00         | #4                 | 547.51                  | 520.81               | 76.5          | 23.5             |
|                             |              | #10                | 495.70                  | 482.11               | 64.6          | 35.4             |
|                             |              | #20                | 422.94                  | 411.09               | 54.2          | 45.8             |
|                             |              | #40                | 389.72                  | 377.86               | 43.7          | 56.3             |
|                             |              | #60                | 381.03                  | 369.84               | 33.9          | 66.1             |
|                             |              | #140               | 358.55                  | 347.17               | 23.9          | 76.1             |
|                             |              | #200               | 348.83                  | 346.51               | 21.9          | 78.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 21.9

Weight of hydrometer sample = 113.76

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 25.0            | 1.0120         | 1.0127            | 0.0128 | 9.0 | 13.9       | 0.0339         | 3.9           | 96.1             |
| 5.00                | 25.0            | 1.0100         | 1.0107            | 0.0128 | 7.0 | 14.4       | 0.0218         | 3.3           | 96.7             |
| 15.00               | 25.0            | 1.0090         | 1.0097            | 0.0128 | 6.0 | 14.7       | 0.0127         | 3.0           | 97.0             |
| 30.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0091         | 2.7           | 97.3             |
| 60.00               | 25.0            | 1.0080         | 1.0087            | 0.0128 | 5.0 | 15.0       | 0.0064         | 2.7           | 97.3             |
| 250.00              | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0032         | 2.4           | 97.6             |
| 1440.00             | 25.0            | 1.0070         | 1.0077            | 0.0128 | 4.0 | 15.2       | 0.0013         | 2.4           | 97.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 9.6      | 8.5     | 9.9  | 12.3 | 8.1  | 8.1     | 46.9  | 13.9 | 0.7  | 0.4  | 0.2     | 15.2  | 2.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0443          | 0.0553          | 0.0691          | 0.1788          | 0.6443          | 1.3725          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.84             | 30.96          | 0.53           |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. *NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. *NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. *NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A,3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D,9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

# CHAIN OF CUSTODY



Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 40912915

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 1                              | 504411    | 9/25/09    | 10:48 | SE            | JB                 |
| 2                              | 504412    | 9/25/09    | 11:25 | SE            | JB                 |
| 3                              | 504413    | 9/25/09    | 11:30 | SE            | JB                 |
|                                | 504425    | 9/25/09    | 11:00 | SE            | JB                 |
| 4                              | 504426    | 9/25/09    | 11:00 | SE            | JB                 |
|                                | 504427    | 9/25/09    | 11:00 | SE            | JB                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                          |               |                          |               |
|--------------------------|---------------|--------------------------|---------------|
| Relinquished By:         | Date/Time     | Received By:             | Date/Time     |
| <i>James Bayek</i>       | 9/25/09 8:55  | <i>Paul J. McCarroll</i> | 9/25/09 19:0  |
| <i>Paul J. McCarroll</i> | 9/28/09 09:13 | <i>P. Dittus</i>         | 9/28/09 9:25  |
| <i>P. Dittus</i>         | 9/28/09 10:20 | <i>W. Jones</i>          | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY



Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: 20912915

**Report Information Data Deliverables Billing Information**

FAX  EMAIL  Same as Client info PO #:

ADEx  Add'l Deliverables

**Regulatory Requirements/Report Limits**

State/Fed Program Criteria

fed

| ANALYSIS                    |        |            |         |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |                          |
|-----------------------------|--------|------------|---------|----|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|--------------------------|
| total PCB congeners NOAA 18 | TOC    | grain size | archive |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |  |                 | Sample Specific Comments |
| 5                           | 504511 | 9/25/09    | 10:00   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
| 6                           | 504512 | 9/25/09    | 10:16   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
| 7                           | 504513 | 9/25/09    | 10:21   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
|                             | 504525 | 9/25/09    | 10:08   | SE | JB | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed chem        | 1                        |
| 8                           | 504526 | 9/25/09    | 10:08   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed gs          | 1                        |
|                             | 504527 | 9/25/09    | 10:08   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>   | sed arch        | 1                        |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |
|                             |        |            |         |    |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   |                 |                          |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 5                              | 504511    | 9/25/09    | 10:00 | SE            | JB                 |
| 6                              | 504512    | 9/25/09    | 10:16 | SE            | JB                 |
| 7                              | 504513    | 9/25/09    | 10:21 | SE            | JB                 |
|                                | 504525    | 9/25/09    | 10:08 | SE            | JB                 |
| 8                              | 504526    | 9/25/09    | 10:08 | SE            | JB                 |
|                                | 504527    | 9/25/09    | 10:08 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

Relinquished By: James Bajich Date/Time: 9/25/09 18:55 Received By: Kathleen Buccaro Date/Time: 9/25/09 19:07

Paul McCann 9-28/09 09:53 P. Dilliant 9/28/09 9:25

P. Dilliant 9/28/09 10:20 A. [Signature] 9/28/09 10:20

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 235

# CHAIN OF CUSTODY

PAGE 7 OF 41



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 10912915

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 504611    | 9/25/09    | 13:30 | SE            | JB                 |
| 10                             | 504612    | 9/25/09    | 13:58 | SE            | JB                 |
| 11                             | 504613    | 9/25/09    | 14:06 | SE            | JB                 |
|                                | 504625    | 9/25/09    | 13:40 | SE            | JB                 |
| 12                             | 504626    | 9/25/09    | 13:40 | SE            | JB                 |
|                                | 504627    | 9/25/09    | 13:40 | SE            | JB                 |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

| Relinquished By: | Date/Time     | Received By:    | Date/Time     |
|------------------|---------------|-----------------|---------------|
| James Boych      | 9/25/09 18:53 | Paul J. McCarty | 9/25/09 19:07 |
| Paul J. McCarty  | 9/28/09 09:13 | R. S. Hunt      | 9/28/09 9:25  |
| P. Dilluit       | 9/28/09 10:20 | L. Moore        | 9/28/09 1:00  |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 8 OF 41

Date Rec'd in Lab:

ALPHA Job #: 10912915

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Report Information Data Deliverables Billing Information

FAX  EMAIL  
 ADEx  Add'l Deliverables

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## ANALYSIS

| total PCB congeners NOAA 18 | TOC | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-----------------------------|-----|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             |     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             |     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             |     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                             |     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                             |     | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             |     | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             |     | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
**Filtration**  
 Done  
 Not Needed  
 Lab to do  
**Preservation**  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 13                             | 504711    | 9/25/09    | 14:37 | SE            | JB                 |
| 14                             | 504712    | 9/25/09    | 14:55 | SE            | JB                 |
| 15                             | 504713    | 9/25/09    | 15:04 | SE            | JB                 |
|                                | 504725    | 9/25/09    | 14:45 | SE            | JB                 |
| 16                             | 504726    | 9/25/09    | 14:45 | SE            | JB                 |
|                                | 504727    | 9/25/09    | 14:45 | SE            | JB                 |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
|--------------------|---------------|--------------------|---------------|
| <i>James Birch</i> | 9/25/09 18:52 | <i>James Birch</i> | 9/25/09 19:07 |
| <i>James Birch</i> | 9/25/09 09:13 | <i>P. Sulheim</i>  | 9/25/09 9:25  |
| <i>P. Sulheim</i>  | 9/25/09 10:20 | <i>James Birch</i> | 9/25/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 237

# CHAIN OF CUSTODY

PAGE 9 OF 41



Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193  
 Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Date Rec'd in Lab: ALPHA Job #: LO912915

## Report Information Data Deliverables Billing Information

FAX  EMAIL  Same as Client info PO #:  
 ADEx  Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program Criteria  
 fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 17 | 504811 | 9/25/09 | 13:06 | SE | HC |
| 18 | 504812 | 9/25/09 | 13:06 | SE | HC |
| 19 | 504813 | 9/25/09 | 13:06 | SE | HC |
|    | 504825 | 9/25/09 | 13:09 | SE | HC |
| 20 | 504826 | 9/25/09 | 13:09 | SE | HC |
|    | 504827 | 9/25/09 | 13:09 | SE | HC |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
|--------------------|---------------|--------------------|---------------|
| <i>[Signature]</i> | 9/25/09 19:05 | <i>[Signature]</i> | 9/25/09 19:07 |
| <i>[Signature]</i> | 9/28/09 09:13 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:20 |



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912916  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Phone:          | (508) 540-8080  |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 08/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912916-01                | 504911           | NEW BEDFORD, MA            | 09/25/09 15:45                  |
| L0912916-02                | 504912           | NEW BEDFORD, MA            | 09/25/09 15:55                  |
| L0912916-03                | 504913           | NEW BEDFORD, MA            | 09/25/09 16:07                  |
| L0912916-04                | 504926           | NEW BEDFORD, MA            | 09/25/09 15:50                  |
| L0912916-05                | 505011           | NEW BEDFORD, MA            | 09/25/09 08:18                  |
| L0912916-06                | 505012           | NEW BEDFORD, MA            | 09/25/09 08:35                  |
| L0912916-07                | 505013           | NEW BEDFORD, MA            | 09/25/09 08:47                  |
| L0912916-08                | 505026           | NEW BEDFORD, MA            | 09/25/09 08:25                  |
| L0912916-09                | 505111           | NEW BEDFORD, MA            | 09/25/09 14:06                  |
| L0912916-10                | 505112           | NEW BEDFORD, MA            | 09/25/09 14:06                  |
| L0912916-11                | 505113           | NEW BEDFORD, MA            | 09/25/09 14:06                  |
| L0912916-12                | 505126           | NEW BEDFORD, MA            | 09/25/09 14:10                  |
| L0912916-13                | 505211           | NEW BEDFORD, MA            | 09/25/09 15:25                  |
| L0912916-14                | 505212           | NEW BEDFORD, MA            | 09/25/09 15:24                  |
| L0912916-15                | 505213           | NEW BEDFORD, MA            | 09/25/09 15:24                  |
| L0912916-16                | 505226           | NEW BEDFORD, MA            | 09/25/09 15:30                  |
| L0912916-17                | 505311           | NEW BEDFORD, MA            | 09/25/09 16:40                  |
| L0912916-18                | 505312           | NEW BEDFORD, MA            | 09/25/09 16:40                  |
| L0912916-19                | 505313           | NEW BEDFORD, MA            | 09/25/09 16:40                  |
| L0912916-20                | 505326           | NEW BEDFORD, MA            | 09/25/09 16:43                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on February 3, 2010. The report was ammended to include revised Grain Size data.

The WG383974-1 Laboratory Duplicate RPD is outside the acceptance criteria for sieve, gravel (111%), % very coarse sand (67%), % coarse sand (21%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Peter Henriksen

Title: Technical Director/Representative

Date: 08/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-01  
**Client ID:** 504911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:45  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.00   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 41.7   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-02  
**Client ID:** 504912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:55  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.20   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.20   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 39.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 34.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912916-03  
**Client ID:** 504913  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 16:07  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.00   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 41.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 48.1   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912916-04  
**Client ID:** 504926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:50  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.80   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.70   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.30   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 53.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 24.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-05  
**Client ID:** 505011  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:18  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.80   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.3   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 21.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 19.7   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.5   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-06  
**Client ID:** 505012  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:35  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.70   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.30   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 18.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 19.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 19.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.80   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-07  
**Client ID:** 505013  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:47  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.40   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.70   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.3   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 22.4   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 14.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-08  
**Client ID:** 505026  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 08:25  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.00   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.5   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 24.1   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 18.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 12.5   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-09  
**Client ID:** 505111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:06  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.5   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 35.3   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 26.5   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 13.8   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-10  
**Client ID:** 505112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:06  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.900  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.70   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.00   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 28.8   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 26.1   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 21.3   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-11  
**Client ID:** 505113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:06  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.40   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 26.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 26.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 23.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.80   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-12  
**Client ID:** 505126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 14:10  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.40   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.20   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 29.7   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 23.8   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 17.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.00   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-13  
**Client ID:** 505211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:25  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 20.8   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 23.7   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-14  
**Client ID:** 505212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:24  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 14.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.4   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 19.8   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-15  
**Client ID:** 505213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:24  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.30   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.30   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.4   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 27.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.5   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 19.1   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.70   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-16  
**Client ID:** 505226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 15:30  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 13.8   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 28.5   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.40   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-17  
**Client ID:** 505311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 16:40  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.600  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.00   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.30   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 16.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 20.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 37.6   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 13.8   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

### SAMPLE RESULTS

**Lab ID:** L0912916-18  
**Client ID:** 505312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 16:40  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.50   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.60   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 26.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 22.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 21.3   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.70   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-19  
**Client ID:** 505313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 16:40  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.20   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.90   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.20   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 29.1   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 24.1   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.4   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**SAMPLE RESULTS**

**Lab ID:** L0912916-20  
**Client ID:** 505326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 16:43  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RL    | MDL | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |     |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.10   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.30   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.9   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 23.3   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.0   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 10.2   |           | %     | 0.100 | --  | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912916

**Report Date:** 08/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG383974-1 QC Sample: L0912916-20 Client ID: 505326 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 0.2           | 0.700            | %     | 111 | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 0.3           | 0.600            | %     | 67  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 2.1           | 1.70             | %     | 21  | Q    | 20         |
| Medium Sand (0.25-0.50 mm)   | 6.3           | 6.60             | %     | 5   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 23.9          | 25.7             | %     | 7   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 23.3          | 24.6             | %     | 5   |      | 20         |
| Silt - (1.95-62.5 um)  | 31.0          | 28.9             | %     | 7   |      | 20         |
| Clay - (<1.95 um)  | 10.2          | 9.70             | %     | 5   |      | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912916

Project Number: TO-0018

Report Date: 08/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

## Cooler Information Custody Seal

## Cooler

|   |        |
|---|--------|
| D | Absent |
| E | Absent |
| G | Absent |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-01A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-02A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-03A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-04A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-05A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-06A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-07A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-08A | Glass 250ml unpreserved | G      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-09A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-10A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-11A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-12A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-13A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-14A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-15A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-16A | Glass 250ml unpreserved | E      | N/A | 3.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-17A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-18A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912916-19A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis(*)   |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912916-20A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Values in parentheses indicate holding time in days

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## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MDL** - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- NI** - Not Ignitable.
- RL** - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

*Data Qualifiers*

**RE** - Analytical results are from sample re-extraction.

**J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

**ND** - Not detected at the reporting limit (RL) for the sample.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912916  
**Report Date:** 08/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# ASTM D422-63

## Wet Sieve Hydrometer



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 504911

Sample Number: L0912916-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 30.97                       | 0.00         | #4                 | 520.85                  | 520.81               | 99.9          | 0.1              |
|                             |              | #10                | 482.19                  | 482.11               | 99.6          | 0.4              |
|                             |              | #20                | 411.12                  | 411.09               | 99.5          | 0.5              |
|                             |              | #40                | 377.99                  | 377.86               | 99.1          | 0.9              |
|                             |              | #60                | 370.13                  | 369.84               | 98.2          | 1.8              |
|                             |              | #140               | 348.12                  | 347.17               | 95.1          | 4.9              |
|                             |              | #200               | 347.13                  | 346.51               | 93.1          | 6.9              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 93.1

Weight of hydrometer sample = 30.97

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times Rm$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0140         | 1.0144            | 0.0132 | 11.0 | 13.4       | 0.0340         | 69.4          | 30.6             |
| 5.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0219         | 59.7          | 40.3             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 54.9          | 45.1             |
| 30.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0091         | 50.1          | 49.9             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 45.2          | 54.8             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 40.4          | 59.6             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 40.4          | 59.6             |

## Fractional Components

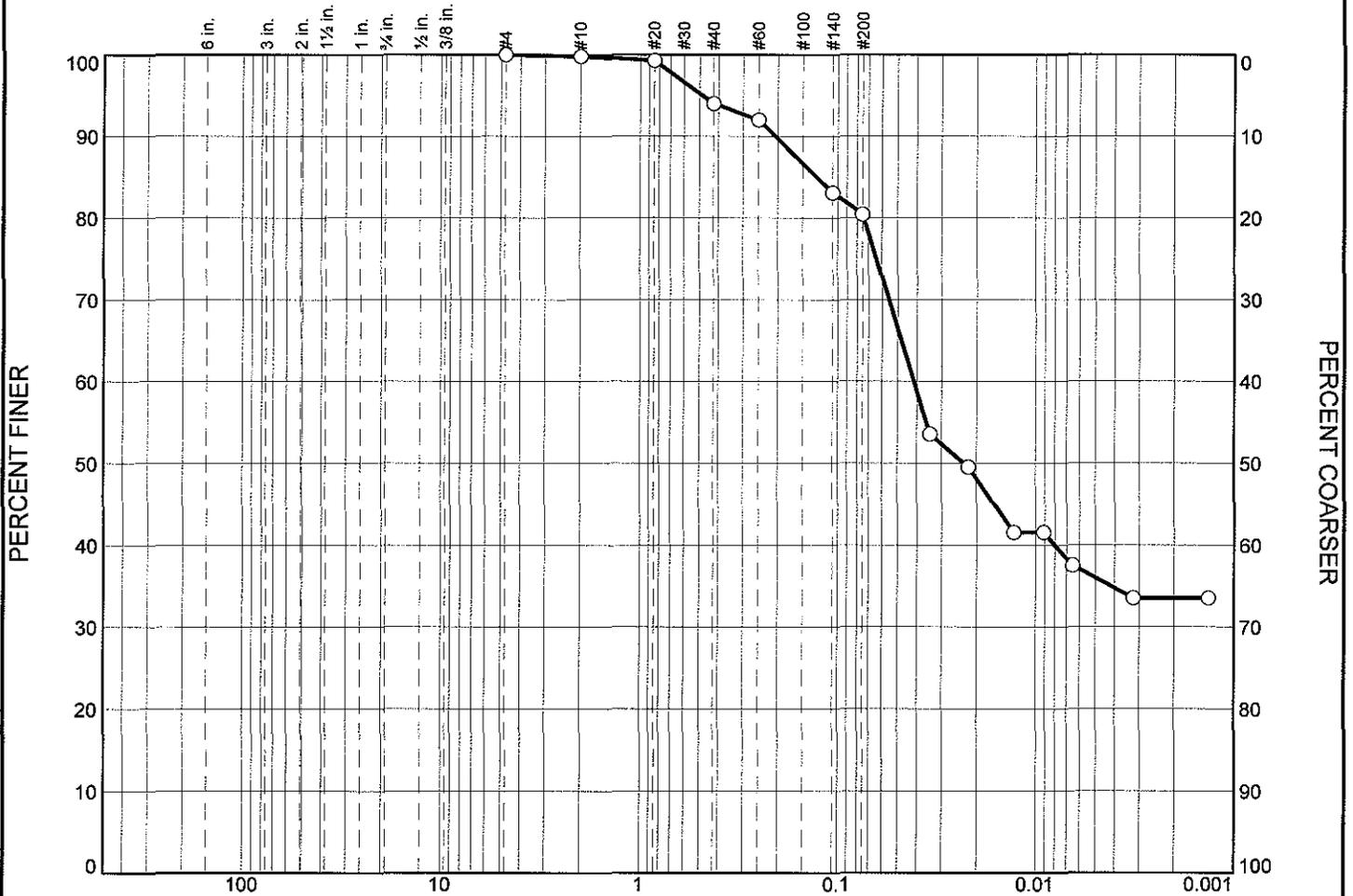
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 0.1     | 0.3  | 1.0  | 2.5  | 8.1     | 12.0  | 20.3 | 10.6 | 8.9  | 6.1     | 45.9  | 41.7 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0091 | 0.0222 | 0.0485 | 0.0573 | 0.0677 | 0.1043 |

| Fineness Modulus |
|------------------|
| 0.07             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| %                                   | Boulders | % | Cobbles | % | Pebbles | % | % Sand   |         |        |      |      | % Silt  |      |      |      | %   | Clay |         |    |
|-------------------------------------|----------|---|---------|---|---------|---|----------|---------|--------|------|------|---------|------|------|------|-----|------|---------|----|
|                                     |          |   |         |   |         |   | Granules | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs. | Med. | Fine |     |      | V. Fine |    |
|                                     |          |   |         |   |         |   | 0.1      | 0.4     | 4.2    | 3.2  | 7.2  | 10.6    | 21.6 | 8.2  | 4.7  | 5.1 |      | 34.6    |    |
| <input type="checkbox"/>            |          |   |         |   |         |   |          |         |        |      |      |         |      |      |      |     |      |         |    |
| <input checked="" type="checkbox"/> | LL       |   | PL      |   | D85     |   | D60      |         | D50    |      | D30  |         | D15  |      | D10  |     | Cc   |         | Cu |
| <input type="checkbox"/>            |          |   |         |   | 0.1275  |   | 0.0414   |         | 0.0231 |      |      |         |      |      |      |     |      |         |    |

| Material Description     | USCS | AASHTO |
|--------------------------|------|--------|
| <input type="checkbox"/> |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="checkbox"/> <b>Source of Sample:</b> 504912    <b>Sample Number:</b> L0912916-02</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 504912

Sample Number: L0912916-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 32.26                       | 0.00         | #4                 | 521.78                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 484.86                  | 484.81               | 99.8          | 0.2              |
|                             |              | #20                | 405.60                  | 405.42               | 99.3          | 0.7              |
|                             |              | #40                | 362.97                  | 361.28               | 94.0          | 6.0              |
|                             |              | #60                | 366.81                  | 366.16               | 92.0          | 8.0              |
|                             |              | #140               | 345.70                  | 342.82               | 83.1          | 16.9             |
|                             |              | #200               | 346.10                  | 345.25               | 80.4          | 19.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 80.4

Weight of hydrometer sample = 32.26

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 53.5          | 46.5             |
| 5.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0219         | 49.5          | 50.5             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0129         | 41.5          | 58.5             |
| 30.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0091         | 41.5          | 58.5             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 37.5          | 62.5             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 33.5          | 66.5             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 33.5          | 66.5             |

## Fractional Components

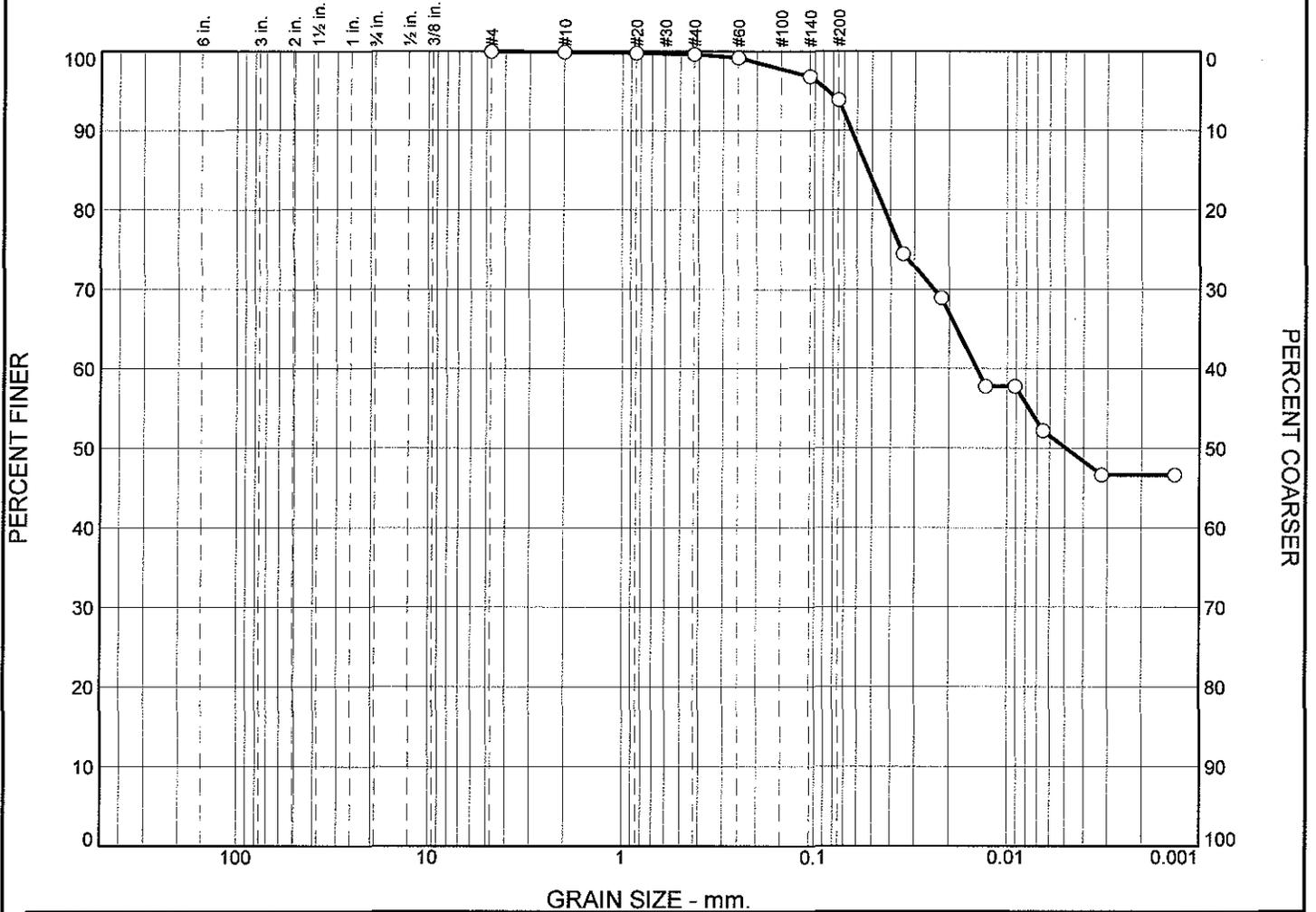
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.4     | 4.2  | 3.2  | 7.2  | 10.6    | 25.6  | 21.6 | 8.2  | 4.7  | 5.1     | 39.6  | 34.6 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0231 | 0.0414 | 0.0740 | 0.1275 | 0.2062 | 0.4840 |

| Fineness Modulus |
|------------------|
| 0.25             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|----------|---------|---------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |          |         |         |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |         |         | 0.0        | 0.1     | 0.1  | 0.5  | 1.9  | 8.0     | 16.1   | 11.5 | 6.5  | 7.1     | 48.1   |

| ⊗ | LL | PL | D85    | D60    | D50    | D30 | D15 | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|-----|-----|-----|----|----|
| ○ |    |    | 0.0525 | 0.0144 | 0.0049 |     |     |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504913    <b>Sample Number:</b> L0912916-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 504913

Sample Number: L0912916-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 27.07                       | 0.00         | #4                 | 520.82                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.13                  | 482.11               | 99.9          | 0.1              |
|                             |              | #20                | 411.12                  | 411.09               | 99.8          | 0.2              |
|                             |              | #40                | 377.90                  | 377.86               | 99.6          | 0.4              |
|                             |              | #60                | 369.96                  | 369.84               | 99.2          | 0.8              |
|                             |              | #140               | 347.81                  | 347.17               | 96.8          | 3.2              |
|                             |              | #200               | 346.95                  | 346.15               | 93.9          | 6.1              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 93.9

Weight of hydrometer sample = 27.07

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 74.5          | 25.5             |
| 5.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0219         | 68.9          | 31.1             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0129         | 57.8          | 42.2             |
| 30.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0091         | 57.8          | 42.2             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 52.2          | 47.8             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 46.6          | 53.4             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 46.6          | 53.4             |

## Fractional Components

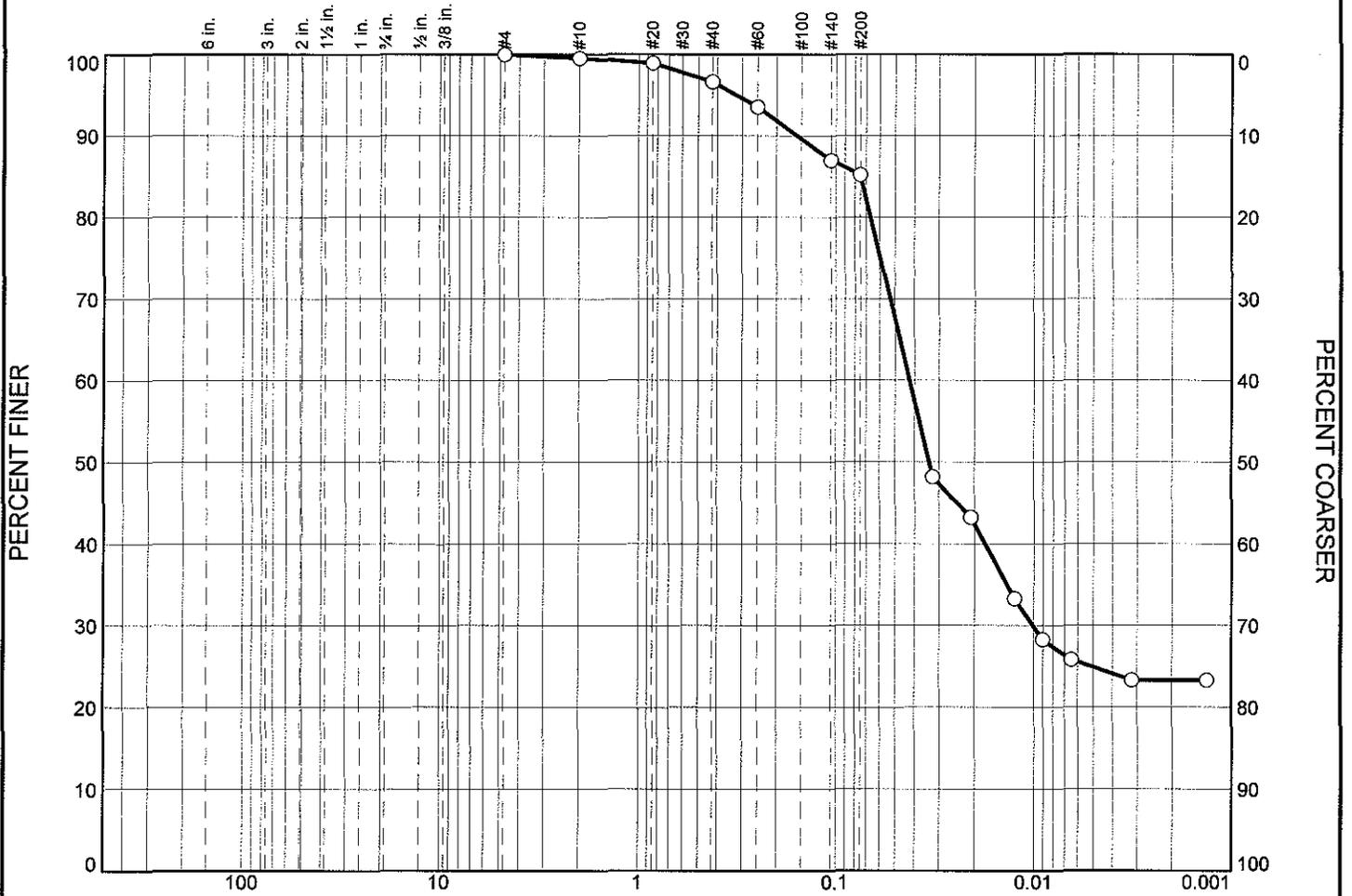
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.0      | 0.1     | 0.1  | 0.5  | 1.9  | 8.0     | 10.6  | 16.1 | 11.5 | 6.5  | 7.1     | 41.2  | 48.1 |

| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0049 | 0.0144 | 0.0429 | 0.0525 | 0.0642 | 0.0856 |

| Fineness Modulus |
|------------------|
| 0.03             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 0.4             | 0.5     | 1.8             | 3.7  | 5.3             | 11.0    | 29.5            | 10.2 | 10.3            | 3.2     | 24.0           |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.0747          |   | 0.0423          |         | 0.0337          |      | 0.0101          |         |                 |      |                 |         |                |  |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 504926    <b>Sample Number:</b> L0912916-04</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 504926

Sample Number: L0912916-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.00                       | 0.00         | #4                 | 521.79                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.05                  | 484.81               | 99.5          | 0.5              |
|                             |              | #20                | 405.77                  | 405.42               | 98.9          | 1.1              |
|                             |              | #40                | 362.53                  | 361.28               | 96.6          | 3.4              |
|                             |              | #60                | 367.85                  | 366.16               | 93.5          | 6.5              |
|                             |              | #140               | 346.44                  | 342.82               | 87.0          | 13.0             |
|                             |              | #200               | 346.23                  | 345.25               | 85.2          | 14.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 85.2

Weight of hydrometer sample = 55.00

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0190         | 1.0194            | 0.0132 | 16.0 | 12.1       | 0.0323         | 48.2          | 51.8             |
| 5.00                | 23.0            | 1.0170         | 1.0174            | 0.0132 | 14.0 | 12.6       | 0.0209         | 43.2          | 56.8             |
| 15.00               | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0125         | 33.3          | 66.7             |
| 30.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0090         | 28.3          | 71.7             |
| 60.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0065         | 25.8          | 74.2             |
| 250.00              | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0032         | 23.3          | 76.7             |
| 1440.00             | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0013         | 23.3          | 76.7             |

## Fractional Components

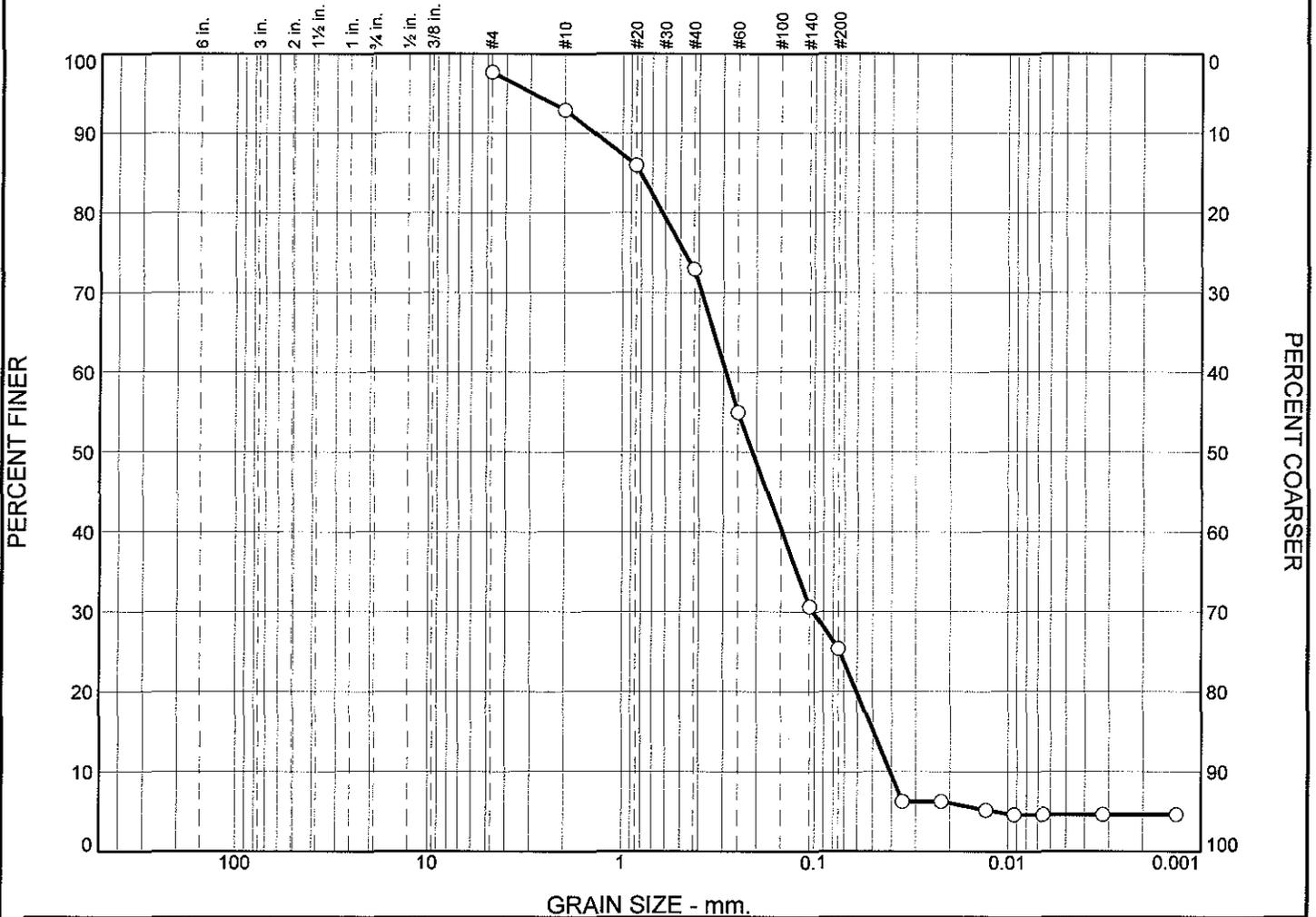
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 0.5     | 1.8  | 3.7  | 5.3  | 11.0    | 22.3  | 29.5 | 10.2 | 10.3 | 3.2     | 53.2  | 24.0 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0101 | 0.0337 | 0.0423 | 0.0667 | 0.0747 | 0.1575 | 0.3214 |

| Fineness Modulus |
|------------------|
| 0.19             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 3.8             | 5.6     | 11.3            | 21.0 | 19.7            | 14.5    | 14.5            | 0.8  | 0.9             |         | 4.6            |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.8063          |   | 0.2901          |         | 0.2099          |      | 0.1017          |         | 0.0496          |      | 0.0407          |         | 0.88           |  | 7.14           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505011    <b>Sample Number:</b> L0912916-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505011

Sample Number: L0912916-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 74.05                       | 0.00         | #4                 | 522.54                  | 520.81               | 97.7          | 2.3              |
|                             |              | #10                | 485.62                  | 482.11               | 92.9          | 7.1              |
|                             |              | #20                | 416.22                  | 411.09               | 86.0          | 14.0             |
|                             |              | #40                | 387.54                  | 377.86               | 72.9          | 27.1             |
|                             |              | #60                | 383.14                  | 369.84               | 55.0          | 45.0             |
|                             |              | #140               | 365.19                  | 347.17               | 30.6          | 69.4             |
|                             |              | #200               | 350.40                  | 346.51               | 25.4          | 74.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 25.4

Weight of hydrometer sample = 74.05

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 6.3           | 93.7             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 6.3           | 93.7             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 5.2           | 94.8             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 4.6           | 95.4             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 4.6           | 95.4             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 4.6           | 95.4             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 4.6           | 95.4             |

## Fractional Components

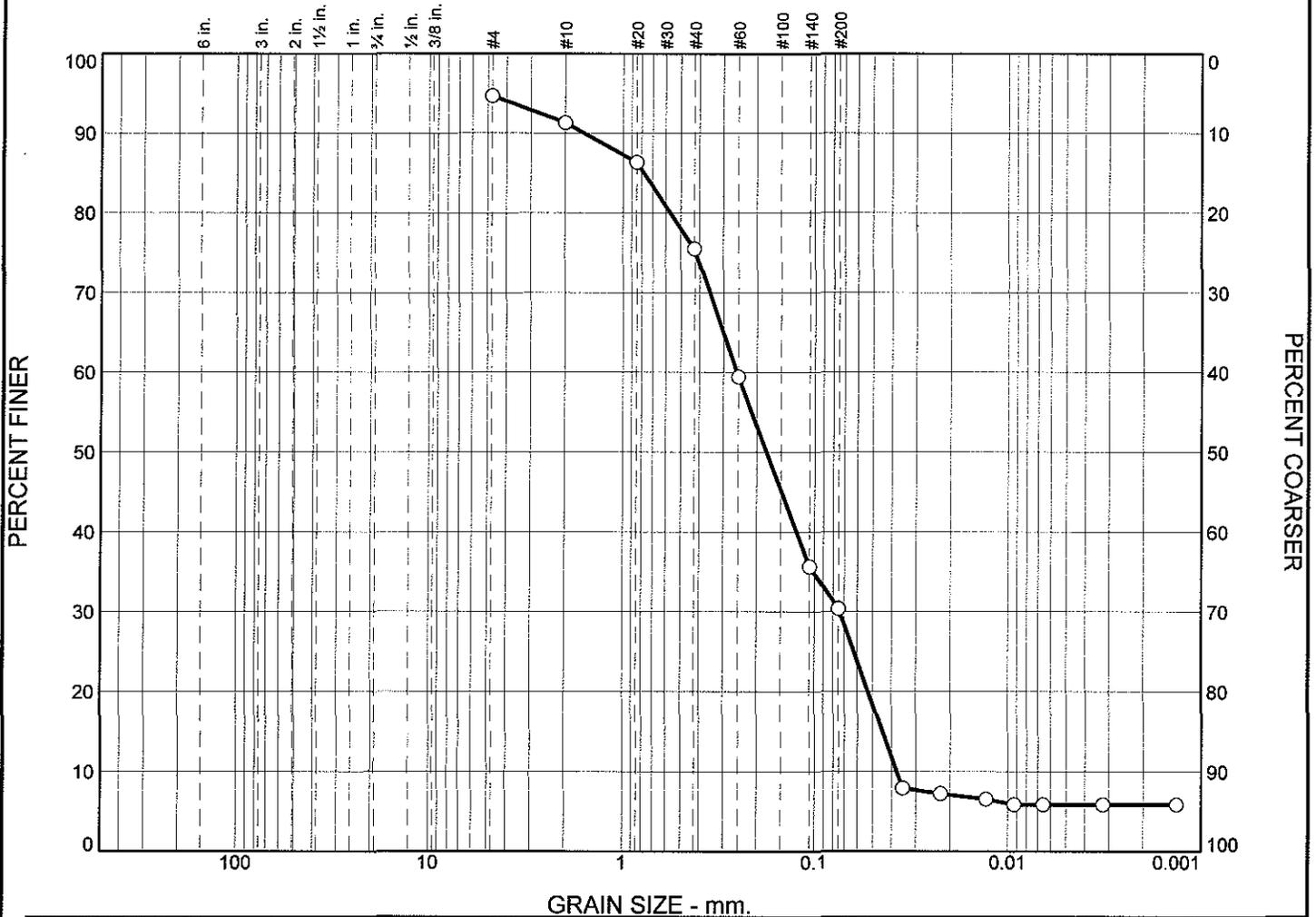
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.8      | 5.6     | 11.3 | 21.0 | 19.7 | 14.5    | 72.1  | 14.5 | 0.8  | 0.9  |         | 16.2  | 4.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0407          | 0.0496          | 0.0605          | 0.1017          | 0.2099          | 0.2901          | 0.6185          | 0.8063          | 1.3938          | 2.9213          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.39             | 7.14           | 0.88           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |        |        |        |         | Silt |      |      | Clay |
|---|----------|---------|---------|----------|---------|--------|--------|--------|---------|------|------|------|------|
|   |          |         |         |          | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs. | Med. | Fine |      |
| ○ |          |         |         | 2.7      | 4.0     | 9.3    | 18.6   | 19.2   | 15.2    | 17.3 | 0.9  | 1.0  | 5.8  |
| × | LL       | PL      | D85     | D60      | D50     | D30    | D15    | D10    | Cc      | Cu   |      |      |      |
| ○ |          |         | 0.7795  | 0.2548   | 0.1780  | 0.0741 | 0.0445 | 0.0376 | 0.57    | 6.78 |      |      |      |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505012    <b>Sample Number:</b> L0912916-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505012

Sample Number: L0912916-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 70.00                       | 0.00         | #4                 | 525.50                  | 521.77               | 94.7          | 5.3              |
|                             |              | #10                | 487.15                  | 484.81               | 91.3          | 8.7              |
|                             |              | #20                | 408.90                  | 405.42               | 86.4          | 13.6             |
|                             |              | #40                | 368.89                  | 361.28               | 75.5          | 24.5             |
|                             |              | #60                | 377.40                  | 366.16               | 59.4          | 40.6             |
|                             |              | #140               | 359.48                  | 342.82               | 35.6          | 64.4             |
|                             |              | #200               | 348.93                  | 345.25               | 30.4          | 69.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 30.4

Weight of hydrometer sample = 70.00

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 7.9           | 92.1             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 7.2           | 92.8             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 6.5           | 93.5             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 5.8           | 94.2             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 5.8           | 94.2             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 5.8           | 94.2             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 5.8           | 94.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.7      | 4.0     | 9.3  | 18.6 | 19.2 | 15.2    | 66.3  | 17.3 | 0.9  | 1.0  |         | 19.2  | 5.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0376          | 0.0445          | 0.0528          | 0.0741          | 0.1780          | 0.2548          | 0.5667          | 0.7795          | 1.5912          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.34             | 6.78           | 0.57           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505013

Sample Number: L0912916-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 100.83                      | 0.00         | #4                 | 528.29                  | 520.81               | 92.6          | 7.4              |
|                             |              | #10                | 486.32                  | 482.11               | 88.4          | 11.6             |
|                             |              | #20                | 418.16                  | 411.09               | 81.4          | 18.6             |
|                             |              | #40                | 392.40                  | 377.86               | 67.0          | 33.0             |
|                             |              | #60                | 388.98                  | 369.84               | 48.0          | 52.0             |
|                             |              | #140               | 369.17                  | 347.17               | 26.2          | 73.8             |
|                             |              | #200               | 351.08                  | 346.51               | 21.6          | 78.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 21.6

Weight of hydrometer sample = 100.83

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 4.3           | 95.7             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 3.9           | 96.1             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 3.2           | 96.8             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 3.2           | 96.8             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 2.9           | 97.1             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 2.9           | 97.1             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 2.9           | 97.1             |

## Fractional Components

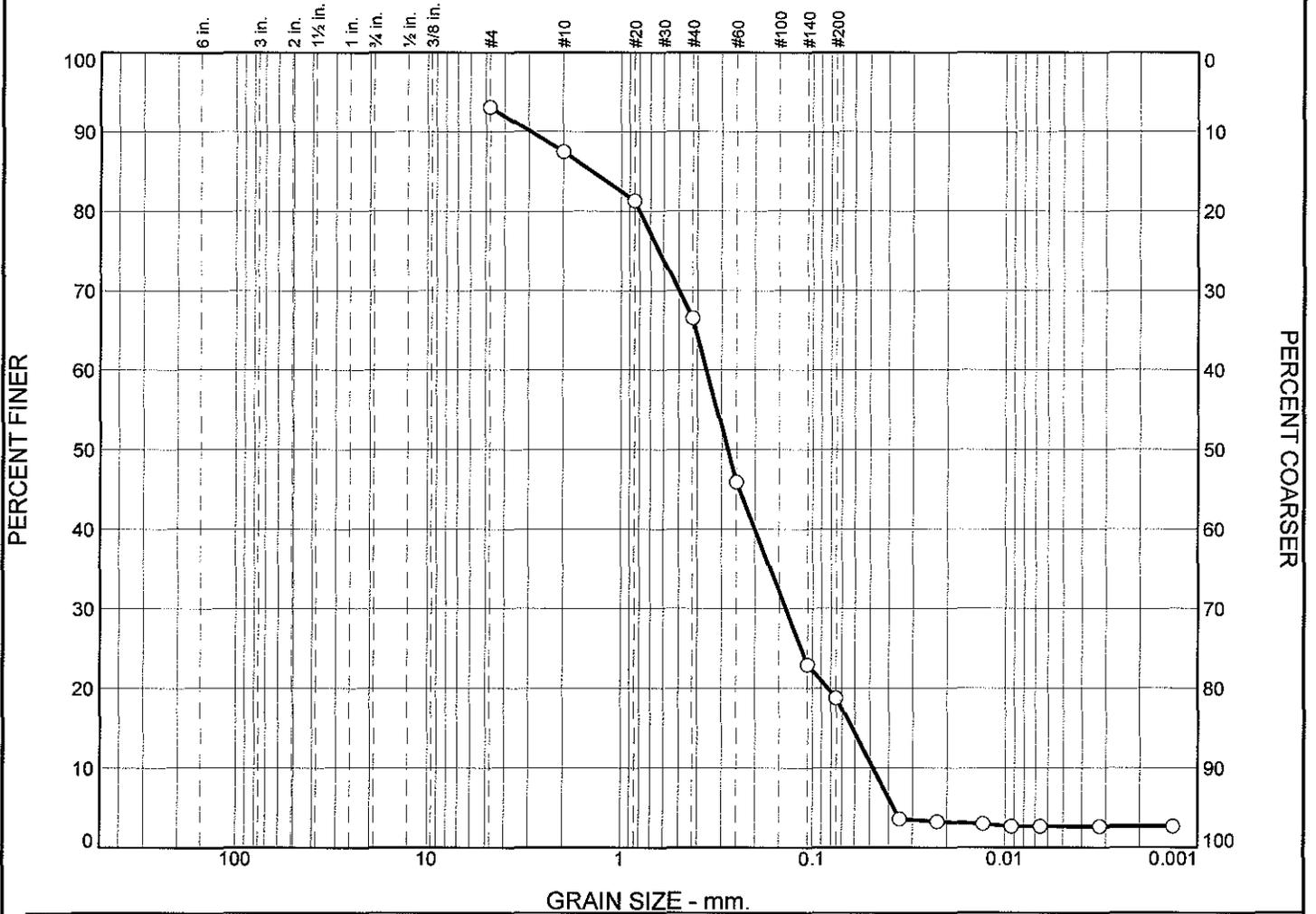
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.4      | 5.7     | 12.3 | 22.4 | 17.6 | 12.9    | 70.9  | 13.3 | 0.7  | 0.4  | 0.2     | 14.6  | 2.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0447          | 0.0559          | 0.0697          | 0.1232          | 0.2644          | 0.3497          | 0.7949          | 1.3198          | 2.7824          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.70             | 7.82           | 0.97           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | Granules        | Sand            |                 |                 |                 | Silt           |                |      |      | Clay |         |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|------|---------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |      | V. Fine |
| ○ |          |         |                 | 4.5             | 5.0             | 12.5            | 24.1            | 18.6            | 12.2           | 11.6           | 0.4  | 0.5  | 0.0  | 2.6     |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |      |         |
| ○ |          |         | 1.4194          | 0.3593          | 0.2779          | 0.1381          | 0.0620          | 0.0483          | 1.10           | 7.44           |      |      |      |         |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912916 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 505026 <b>Sample Number:</b> L0912916-08 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505026

Sample Number: L0912916-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 95.31                       | 0.00         | #4                 | 528.37                  | 521.77               | 93.1          | 6.9              |
|                             |              | #10                | 490.15                  | 484.81               | 87.5          | 12.5             |
|                             |              | #20                | 411.30                  | 405.42               | 81.3          | 18.7             |
|                             |              | #40                | 375.36                  | 361.28               | 66.5          | 33.5             |
|                             |              | #60                | 385.84                  | 366.16               | 45.9          | 54.1             |
|                             |              | #140               | 364.70                  | 342.82               | 22.9          | 77.1             |
|                             |              | #200               | 349.20                  | 345.25               | 18.8          | 81.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 18.8

Weight of hydrometer sample = 95.31

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 3.6           | 96.4             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 3.3           | 96.7             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 3.0           | 97.0             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 2.6           | 97.4             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 2.6           | 97.4             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 2.6           | 97.4             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 2.6           | 97.4             |

## Fractional Components

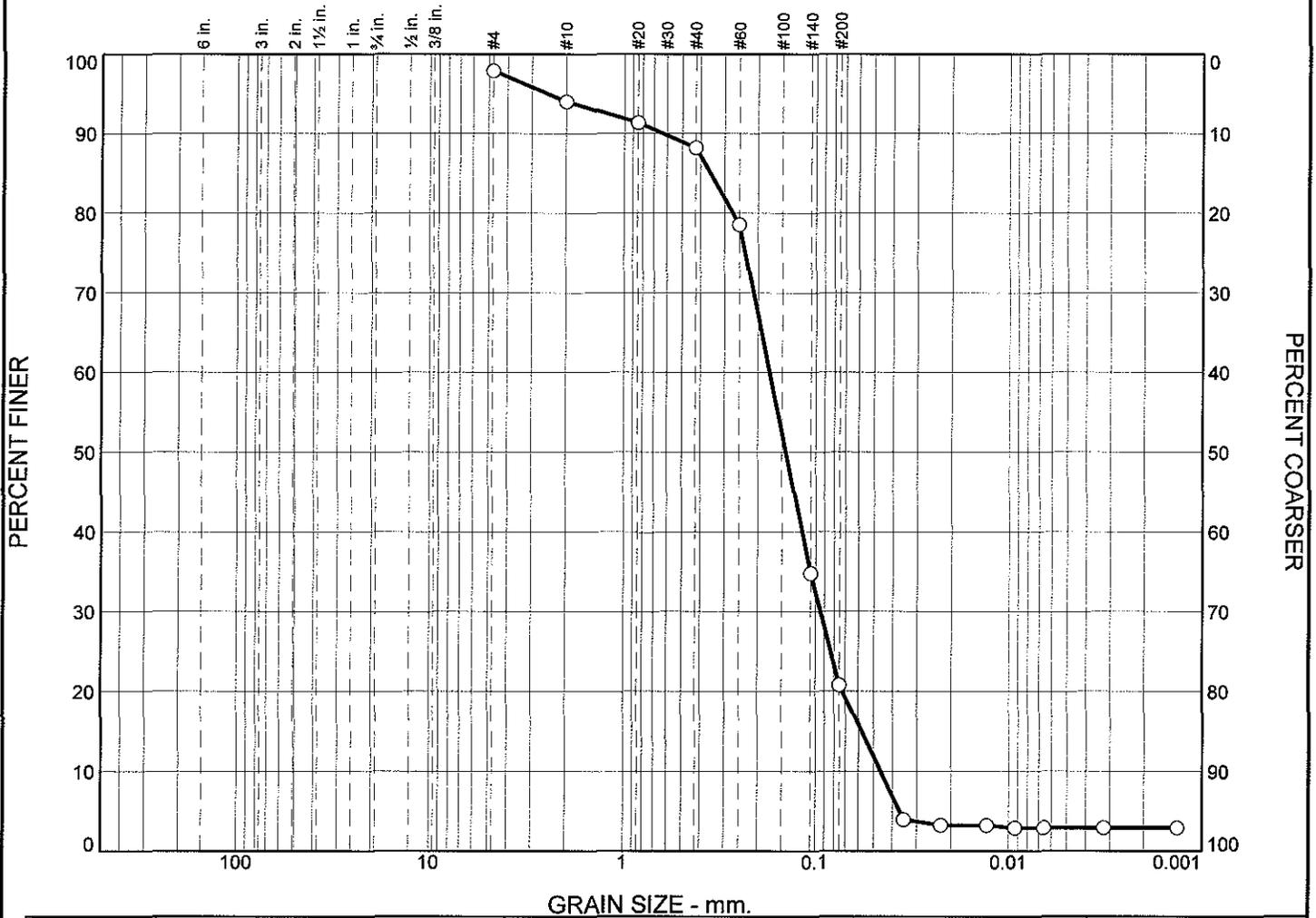
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.5      | 5.0     | 12.5 | 24.1 | 18.6 | 12.2    | 72.4  | 11.6 | 0.4  | 0.5  | 0.0     | 12.5  | 2.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0483          | 0.0620          | 0.0830          | 0.1381          | 0.2779          | 0.3593          | 0.7996          | 1.4194          | 2.9546          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.76             | 7.44           | 1.10           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | % Sand          |         |                 |      |                 | % Silt  |                 |      |                 | % | Clay           |         |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---|----------------|---------|----------------|
|   |          |   |         |   |                 |   | Granules        | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            |   |                | V. Fine |                |
| ○ |          |   |         |   |                 |   | 3.1             | 2.1     | 2.9             | 10.5 | 35.3            | 26.5    | 12.9            | 0.5  | 0.4             |   | 2.9            |         |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |   | C <sub>c</sub> |         | C <sub>u</sub> |
| ○ |          |   |         |   | 0.3563          |   | 0.1737          |         | 0.1428          |      | 0.0941          |         | 0.0578          |      | 0.0461          |   | 1.11           |         | 3.77           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505111    <b>Sample Number:</b> L0912916-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505111

Sample Number: L0912916-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 96.21                       | 0.00         | #4                 | 522.84                  | 520.81               | 97.9          | 2.1              |
|                             |              | #10                | 485.84                  | 482.11               | 94.0          | 6.0              |
|                             |              | #20                | 413.64                  | 411.09               | 91.4          | 8.6              |
|                             |              | #40                | 380.89                  | 377.86               | 88.2          | 11.8             |
|                             |              | #60                | 379.14                  | 369.84               | 78.5          | 21.5             |
|                             |              | #140               | 389.25                  | 347.17               | 34.8          | 65.2             |
|                             |              | #200               | 360.01                  | 346.51               | 20.8          | 79.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 20.8

Weight of hydrometer sample = 96.21

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 3.9           | 96.1             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 3.3           | 96.7             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 3.3           | 96.7             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 2.9           | 97.1             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 2.9           | 97.1             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 2.9           | 97.1             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 2.9           | 97.1             |

## Fractional Components

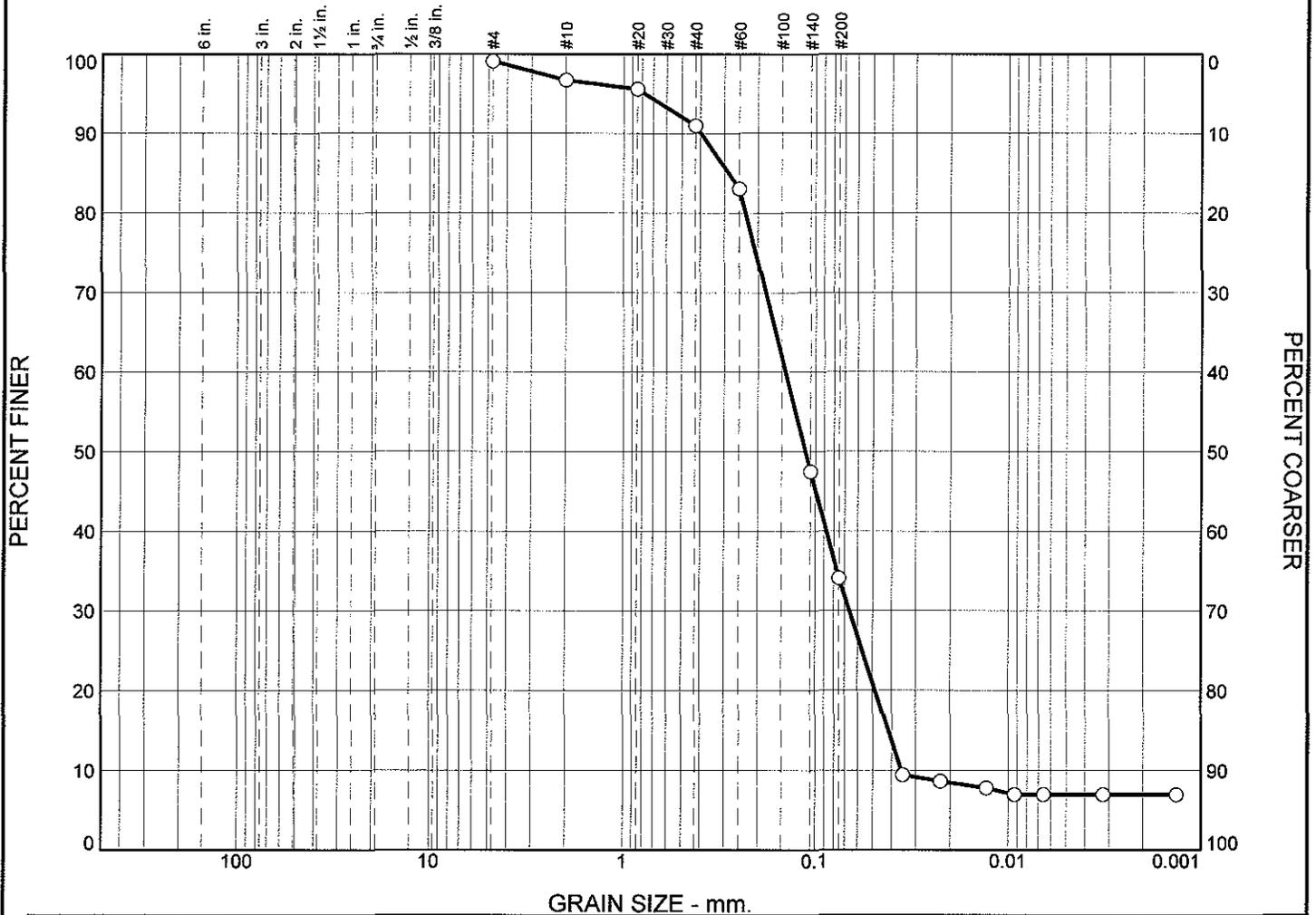
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.1      | 2.1     | 2.9  | 10.5 | 35.3 | 26.5    | 77.3  | 12.9 | 0.5  | 0.4  |         | 13.8  | 2.9  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0461 | 0.0578 | 0.0724 | 0.0941 | 0.1428 | 0.1737 | 0.2708 | 0.3563 | 0.6298 | 2.4926 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.91             | 3.77           | 1.11           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 1.9             | 0.9     | 3.7             | 9.0  | 28.8            | 26.1    | 19.0            | 1.2  | 1.1             | 0.0     | 6.9            |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.2847          |   | 0.1433          |         | 0.1126          |      | 0.0661          |         | 0.0416          |      | 0.0357          |         | 0.85           |  | 4.02           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505112    <b>Sample Number:</b> L0912916-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505112

Sample Number: L0912916-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 66.10                       | 0.00         | #4                 | 522.38                  | 521.77               | 99.1          | 0.9              |
|                             |              | #10                | 486.37                  | 484.81               | 96.7          | 3.3              |
|                             |              | #20                | 406.57                  | 405.82               | 95.6          | 4.4              |
|                             |              | #40                | 364.32                  | 361.28               | 91.0          | 9.0              |
|                             |              | #60                | 371.40                  | 366.16               | 83.1          | 16.9             |
|                             |              | #140               | 366.32                  | 342.82               | 47.5          | 52.5             |
|                             |              | #200               | 354.11                  | 345.25               | 34.1          | 65.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 34.1

Weight of hydrometer sample = 66.10

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 9.4           | 90.6             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 8.6           | 91.4             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 7.8           | 92.2             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 6.9           | 93.1             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 6.9           | 93.1             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 6.9           | 93.1             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 6.9           | 93.1             |

## Fractional Components

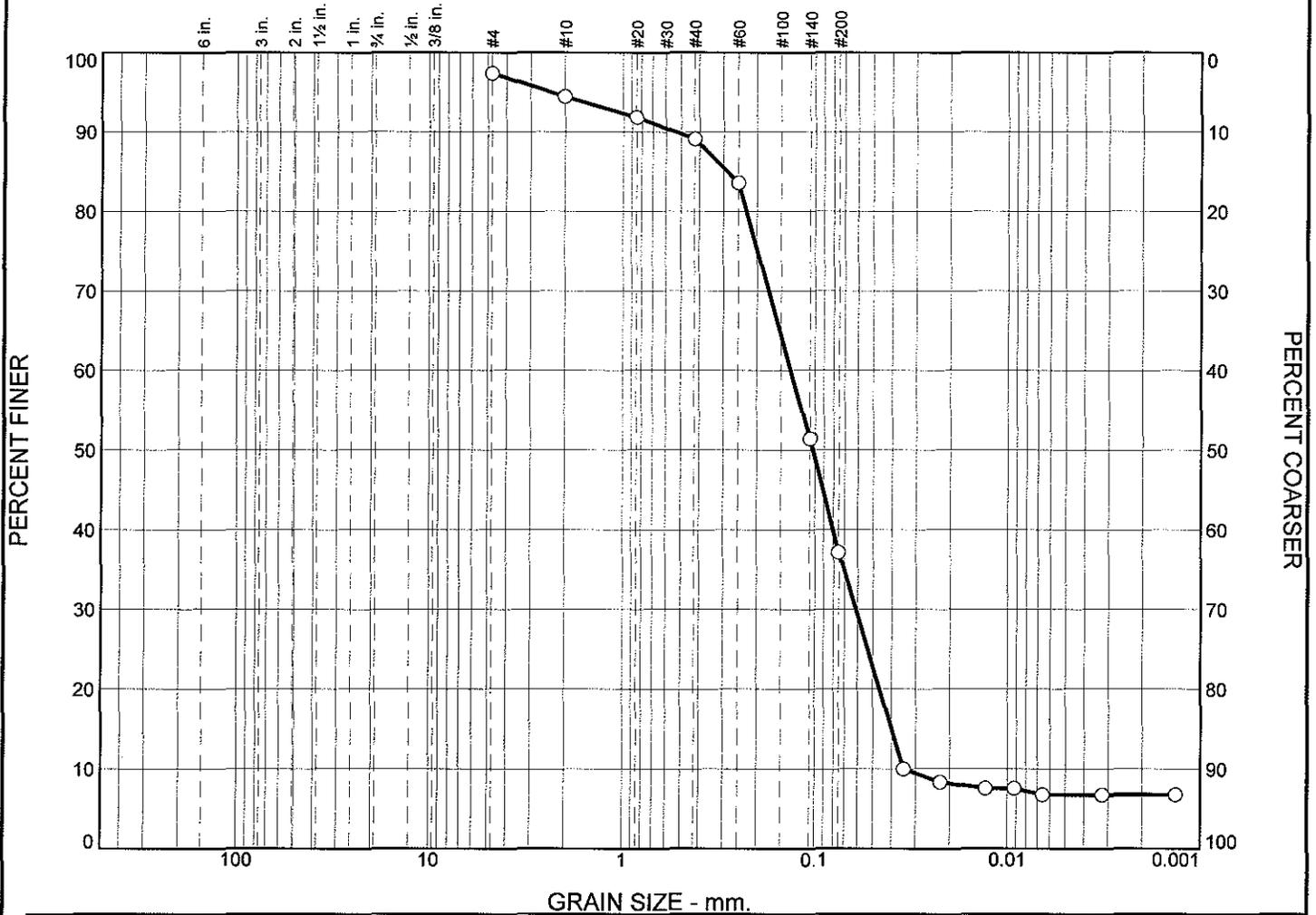
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.9      | 0.9     | 3.7  | 9.0  | 28.8 | 26.1    | 68.5  | 19.0 | 1.2  | 1.1  | 0.0     | 21.3  | 6.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0357          | 0.0416          | 0.0485          | 0.0661          | 0.1126          | 0.1433          | 0.2322          | 0.2847          | 0.3979          | 0.7786          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.67             | 4.02           | 0.85           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |                 | 2.4             | 2.1             | 2.6             | 6.1             | 26.0            | 26.9           | 21.1           | 1.8  | 0.6  | 0.4     | 6.8    |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.2861          | 0.1332          | 0.1024          | 0.0612          | 0.0400          | 0.0347          | 0.81           | 3.84           |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912916 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 505113 <b>Sample Number:</b> L0912916-11 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505113

Sample Number: L0912916-11

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 73.98                       | 0.00         | #4                 | 522.75                  | 520.81               | 97.4          | 2.6              |
|                             |              | #10                | 484.29                  | 482.11               | 94.4          | 5.6              |
|                             |              | #20                | 413.00                  | 411.09               | 91.8          | 8.2              |
|                             |              | #40                | 379.90                  | 377.86               | 89.1          | 10.9             |
|                             |              | #60                | 373.90                  | 369.84               | 83.6          | 16.4             |
|                             |              | #140               | 370.97                  | 347.17               | 51.4          | 48.6             |
|                             |              | #200               | 357.08                  | 346.51               | 37.1          | 62.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 37.1

Weight of hydrometer sample = 73.98

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 10.0          | 90.0             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 8.4           | 91.6             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 7.6           | 92.4             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 7.6           | 92.4             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 6.8           | 93.2             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 6.8           | 93.2             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 6.8           | 93.2             |

## Fractional Components

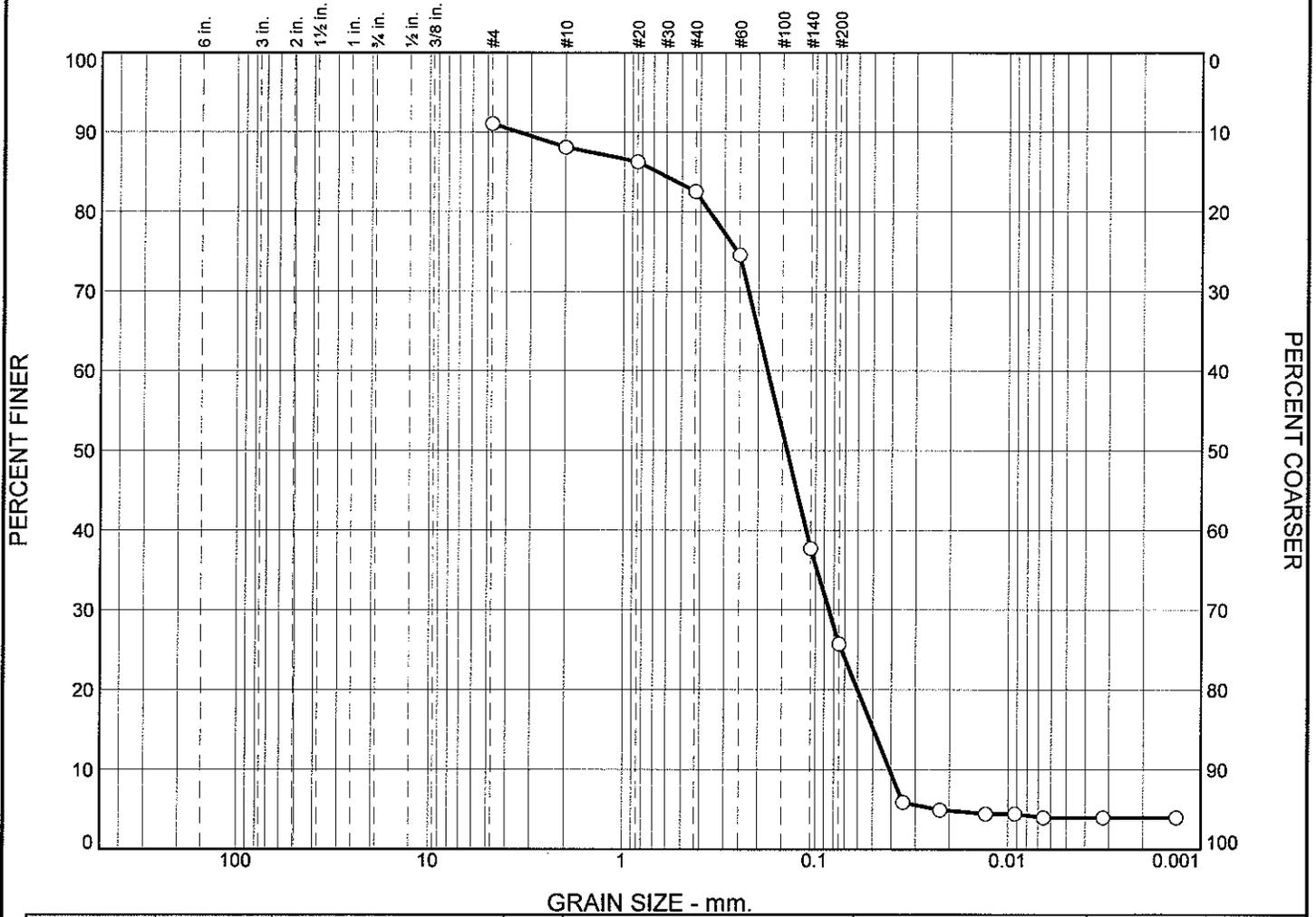
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.4      | 2.1     | 2.6  | 6.1  | 26.0 | 26.9    | 63.7  | 21.1 | 1.8  | 0.6  | 0.4     | 23.9  | 6.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0347          | 0.0400          | 0.0461          | 0.0612          | 0.1024          | 0.1332          | 0.2271          | 0.2861          | 0.5340          | 2.3636          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.74             | 3.84           | 0.81           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |        |      |        |         | % Silt |      |        |         | % Clay |  |      |
|---|----------|---|---------|---|---------|---|----------|---------|--------|------|--------|---------|--------|------|--------|---------|--------|--|------|
|   |          |   |         |   |         |   |          | V. Crs. | Crs.   | Med. | Fine   | V. Fine | Crs.   | Med. | Fine   | V. Fine |        |  |      |
| ○ |          |   |         |   |         |   | 2.4      | 1.5     | 3.2    | 8.9  | 29.7   | 23.8    | 15.4   | 1.0  | 0.4    | 0.2     | 4.0    |  |      |
| × | LL       |   | PL      |   | D85     |   | D60      |         | D50    |      | D30    |         | D15    |      | D10    |         | Cc     |  | Cu   |
| ○ |          |   |         |   | 0.6707  |   | 0.1782   |         | 0.1412 |      | 0.0849 |         | 0.0495 |      | 0.0407 |         | 0.99   |  | 4.37 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505126    <b>Sample Number:</b> L0912916-12</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p> <p style="text-align: right;"><b>Figure</b></p> |
|--|--|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505126

Sample Number: L0912916-12

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 87.05                       | 0.00         | #4                 | 529.55                  | 521.77               | 91.1          | 8.9              |
|                             |              | #10                | 487.39                  | 484.81               | 88.1          | 11.9             |
|                             |              | #20                | 407.00                  | 405.42               | 86.3          | 13.7             |
|                             |              | #40                | 364.55                  | 361.28               | 82.5          | 17.5             |
|                             |              | #60                | 373.11                  | 366.16               | 74.5          | 25.5             |
|                             |              | #140               | 374.90                  | 342.82               | 37.7          | 62.3             |
|                             |              | #200               | 355.67                  | 345.25               | 25.7          | 74.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 25.7

Weight of hydrometer sample = 87.05

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 5.9           | 94.1             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 4.9           | 95.1             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 4.4           | 95.6             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 4.4           | 95.6             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 4.0           | 96.0             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 4.0           | 96.0             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 4.0           | 96.0             |

## Fractional Components

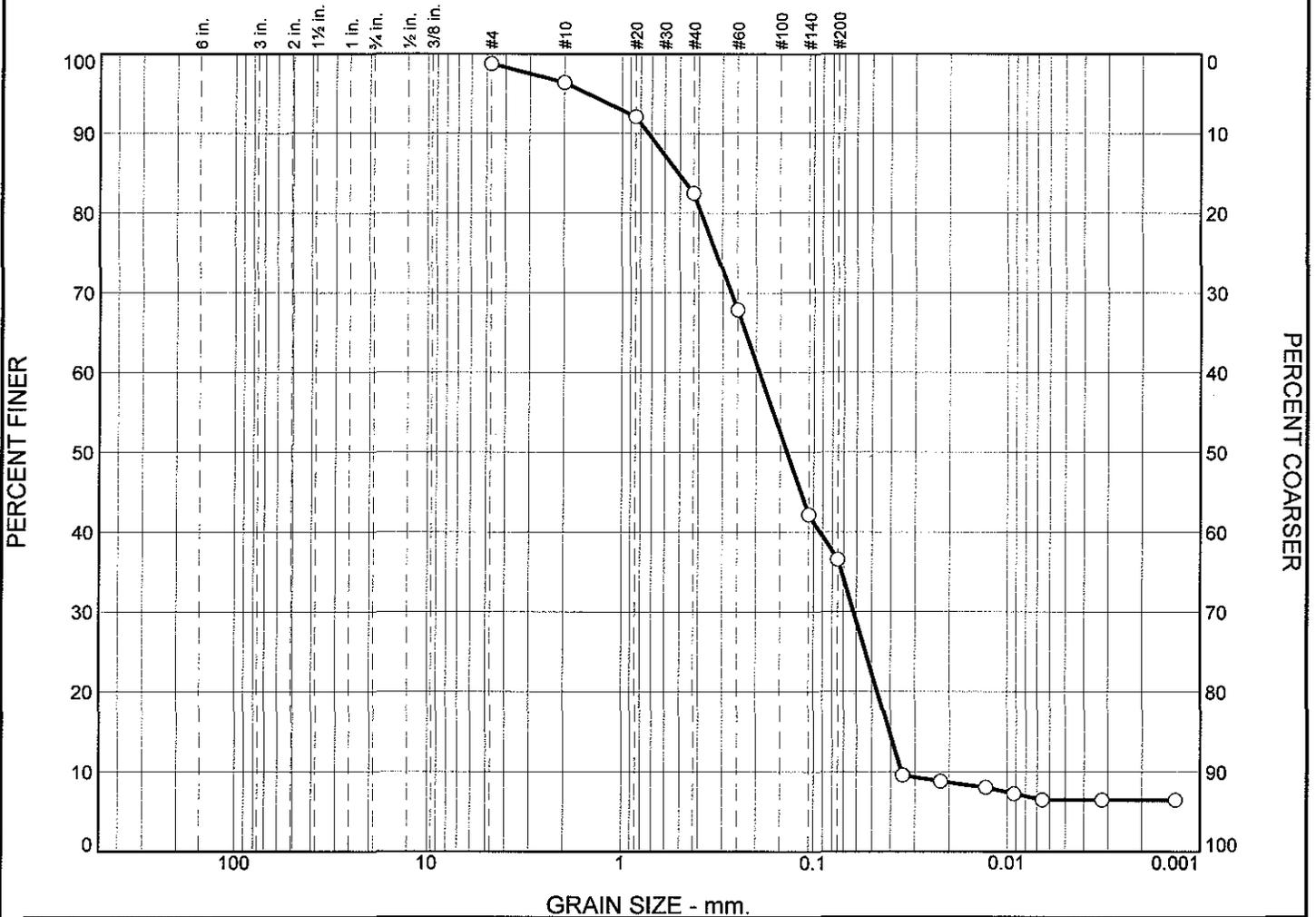
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.4      | 1.5     | 3.2  | 8.9  | 29.7 | 23.8    | 67.1  | 15.4 | 1.0  | 0.4  | 0.2     | 17.0  | 4.0  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 0.0407 | 0.0495 | 0.0601 | 0.0849 | 0.1412 | 0.1782 | 0.3593 | 0.6707 | 3.4834 |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.19             | 4.37           | 0.99           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |                 | 1.9             | 3.5             | 8.1             | 16.9            | 20.8            | 16.9           | 20.8           | 1.1  | 1.4  | 0.4     | 6.5    |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.5086          | 0.1921          | 0.1376          | 0.0622          | 0.0405          | 0.0351          | 0.57           | 5.47           |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |   |
|--|---|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 505211    <b>Sample Number:</b> L0912916-13</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p> <p style="text-align: center;"><b>Figure</b></p> |
|--|---|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505211

Sample Number: L0912916-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 76.07                       | 0.00         | #4                 | 521.76                  | 520.81               | 98.8          | 1.2              |
|                             |              | #10                | 483.91                  | 482.11               | 96.4          | 3.6              |
|                             |              | #20                | 414.35                  | 411.09               | 92.1          | 7.9              |
|                             |              | #40                | 385.15                  | 377.86               | 82.5          | 17.5             |
|                             |              | #60                | 380.97                  | 369.84               | 67.9          | 32.1             |
|                             |              | #140               | 366.72                  | 347.17               | 42.2          | 57.8             |
|                             |              | #200               | 350.77                  | 346.51               | 36.6          | 63.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 36.6

Weight of hydrometer sample = 76.07

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 9.6           | 90.4             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 8.8           | 91.2             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0129         | 8.0           | 92.0             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 7.2           | 92.8             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 6.5           | 93.5             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 6.5           | 93.5             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 6.5           | 93.5             |

## Fractional Components

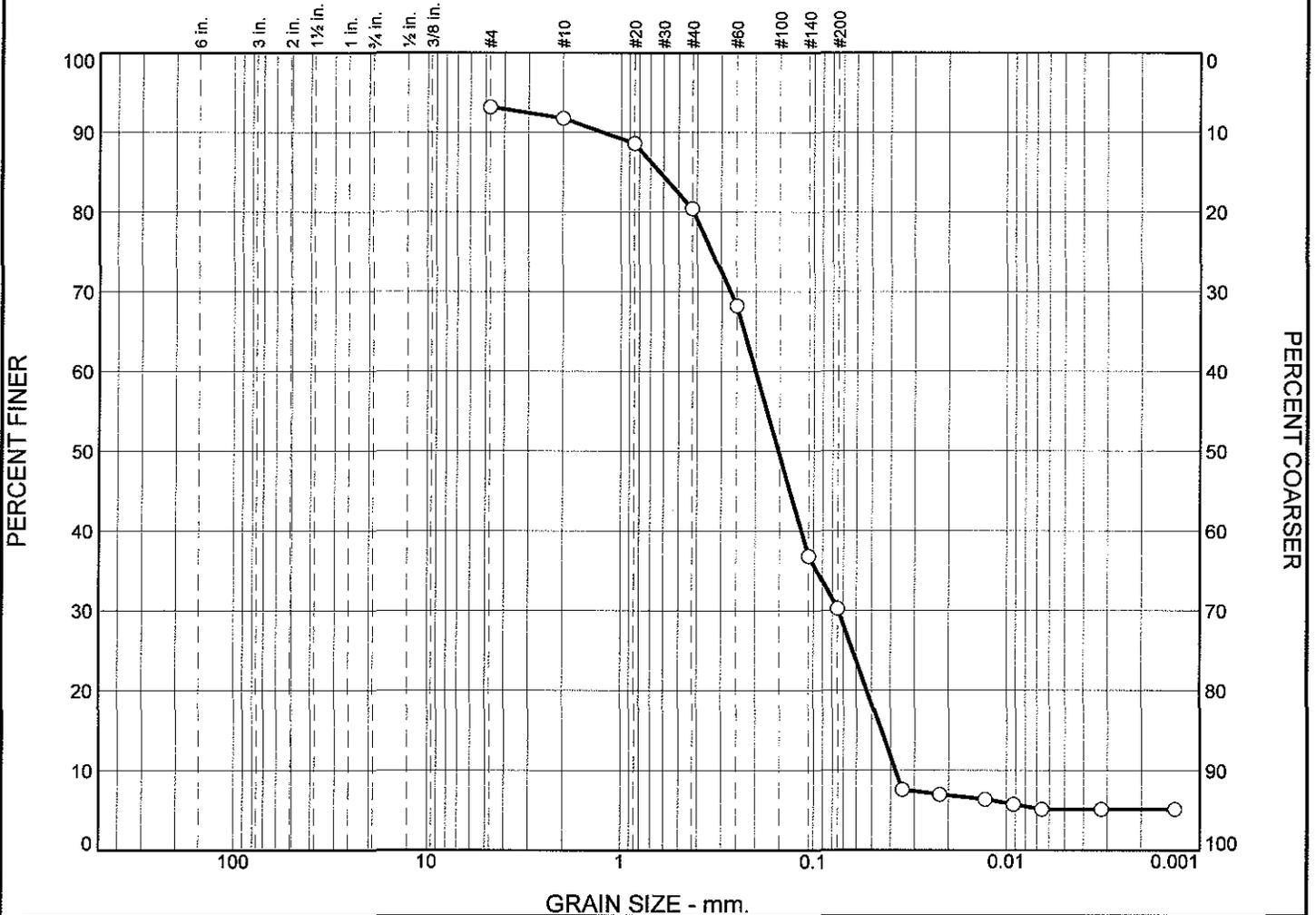
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.9      | 3.5     | 8.1  | 16.9 | 20.8 | 16.9    | 66.2  | 20.8 | 1.1  | 1.4  | 0.4     | 23.7  | 6.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0351          | 0.0405          | 0.0467          | 0.0622          | 0.1376          | 0.1921          | 0.3879          | 0.5086          | 0.7303          | 1.5168          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.98             | 5.47           | 0.57           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 1.2        | 2.5     | 6.9    | 14.0   | 25.4   | 18.0    | 17.5   | 0.8  | 1.1  | 0.4     | 5.1    |
| X | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.6265    | 0.1996     | 0.1519  | 0.0744 | 0.0446 | 0.0377 | 0.74    | 5.30   |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505212    <b>Sample Number:</b> L0912916-14</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505212

Sample Number: L0912916-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 79.13                       | 0.00         | #4                 | 527.17                  | 521.77               | 93.2          | 6.8              |
|                             |              | #10                | 485.95                  | 484.81               | 91.7          | 8.3              |
|                             |              | #20                | 407.91                  | 405.42               | 88.6          | 11.4             |
|                             |              | #40                | 367.73                  | 361.28               | 80.4          | 19.6             |
|                             |              | #60                | 375.80                  | 366.16               | 68.3          | 31.7             |
|                             |              | #140               | 367.69                  | 342.82               | 36.8          | 63.2             |
|                             |              | #200               | 350.45                  | 345.25               | 30.3          | 69.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 30.3

Weight of hydrometer sample = 79.13

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 7.6           | 92.4             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 7.0           | 93.0             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0129         | 6.4           | 93.6             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 5.8           | 94.2             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 5.1           | 94.9             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 5.1           | 94.9             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 5.1           | 94.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.2      | 2.5     | 6.9  | 14.0 | 25.4 | 18.0    | 66.8  | 17.5 | 0.8  | 1.1  | 0.4     | 19.8  | 5.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0377          | 0.0446          | 0.0529          | 0.0744          | 0.1519          | 0.1996          | 0.4170          | 0.6265          | 1.2477          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.19             | 5.30           | 0.74           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505213

Sample Number: L0912916-15

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 82.15                       | 0.00         | #4                 | 522.01                  | 520.81               | 98.5          | 1.5              |
|                             |              | #10                | 483.76                  | 482.11               | 96.5          | 3.5              |
|                             |              | #20                | 413.46                  | 411.09               | 93.6          | 6.4              |
|                             |              | #40                | 385.15                  | 377.86               | 84.8          | 15.2             |
|                             |              | #60                | 381.58                  | 369.84               | 70.5          | 29.5             |
|                             |              | #140               | 374.83                  | 347.17               | 36.8          | 63.2             |
|                             |              | #200               | 352.95                  | 346.51               | 29.0          | 71.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 29.0

Weight of hydrometer sample = 82.15

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 7.0           | 93.0             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 5.9           | 94.1             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 5.3           | 94.7             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 5.3           | 94.7             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 4.7           | 95.3             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 4.7           | 95.3             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 4.7           | 95.3             |

## Fractional Components

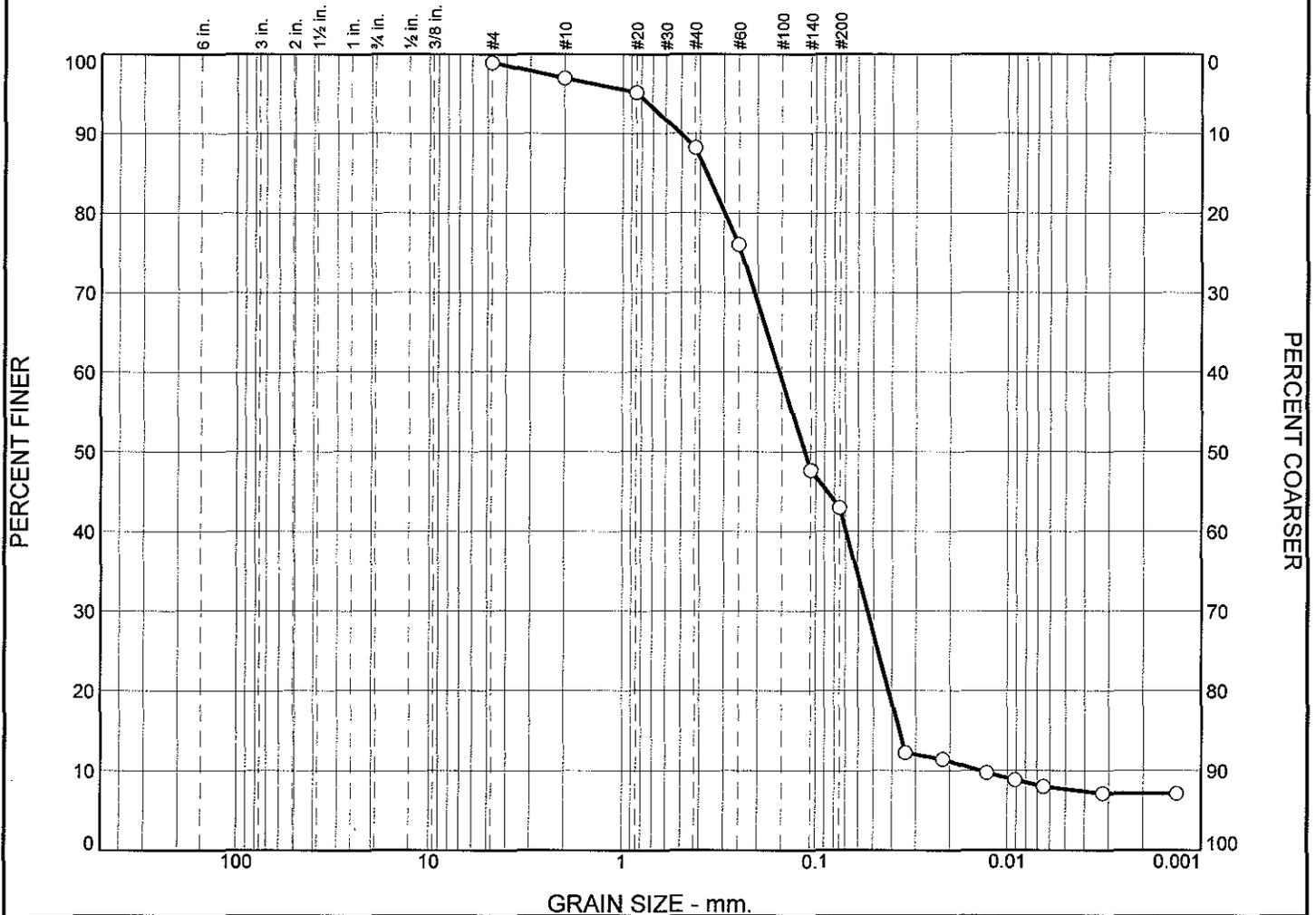
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.6      | 2.3     | 7.3  | 16.4 | 27.2 | 19.5    | 72.7  | 17.1 | 1.2  | 0.5  | 0.3     | 19.1  | 4.7  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0385 | 0.0459 | 0.0547 | 0.0785 | 0.1483 | 0.1914 | 0.3560 | 0.4326 | 0.6394 | 1.2702 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.95             | 4.97           | 0.84           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 1.6        | 1.5     | 5.6    | 13.8   | 23.0   | 17.2    | 23.8   | 1.8  | 1.9  | 1.0     | 7.4    |
|   |            |           |           |            |         |        |        |        |         |        |      |      |         |        |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.3690    | 0.1539     | 0.1138  | 0.0537 | 0.0365 | 0.0141 | 1.33    | 10.92  |      |      |         |        |
|   |            |           |           |            |         |        |        |        |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912916 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 505226 <b>Sample Number:</b> L0912916-16 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  | <b>Figure</b>               |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505226

Sample Number: L0912916-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 81.01                       | 0.00         | #4                 | 522.62                  | 521.77               | 99.0          | 1.0              |
|                             |              | #10                | 486.42                  | 484.81               | 97.0          | 3.0              |
|                             |              | #20                | 406.85                  | 405.42               | 95.2          | 4.8              |
|                             |              | #40                | 366.91                  | 361.28               | 88.2          | 11.8             |
|                             |              | #60                | 376.04                  | 366.16               | 76.1          | 23.9             |
|                             |              | #140               | 365.82                  | 342.82               | 47.7          | 52.3             |
|                             |              | #200               | 349.05                  | 345.25               | 43.0          | 57.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 43.0

Weight of hydrometer sample = 81.01

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0140         | 1.0144            | 0.0132 | 11.0 | 13.4       | 0.0340         | 12.2          | 87.8             |
| 5.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0217         | 11.4          | 88.6             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 9.7           | 90.3             |
| 30.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0091         | 8.8           | 91.2             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 8.0           | 92.0             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 7.1           | 92.9             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 7.1           | 92.9             |

## Fractional Components

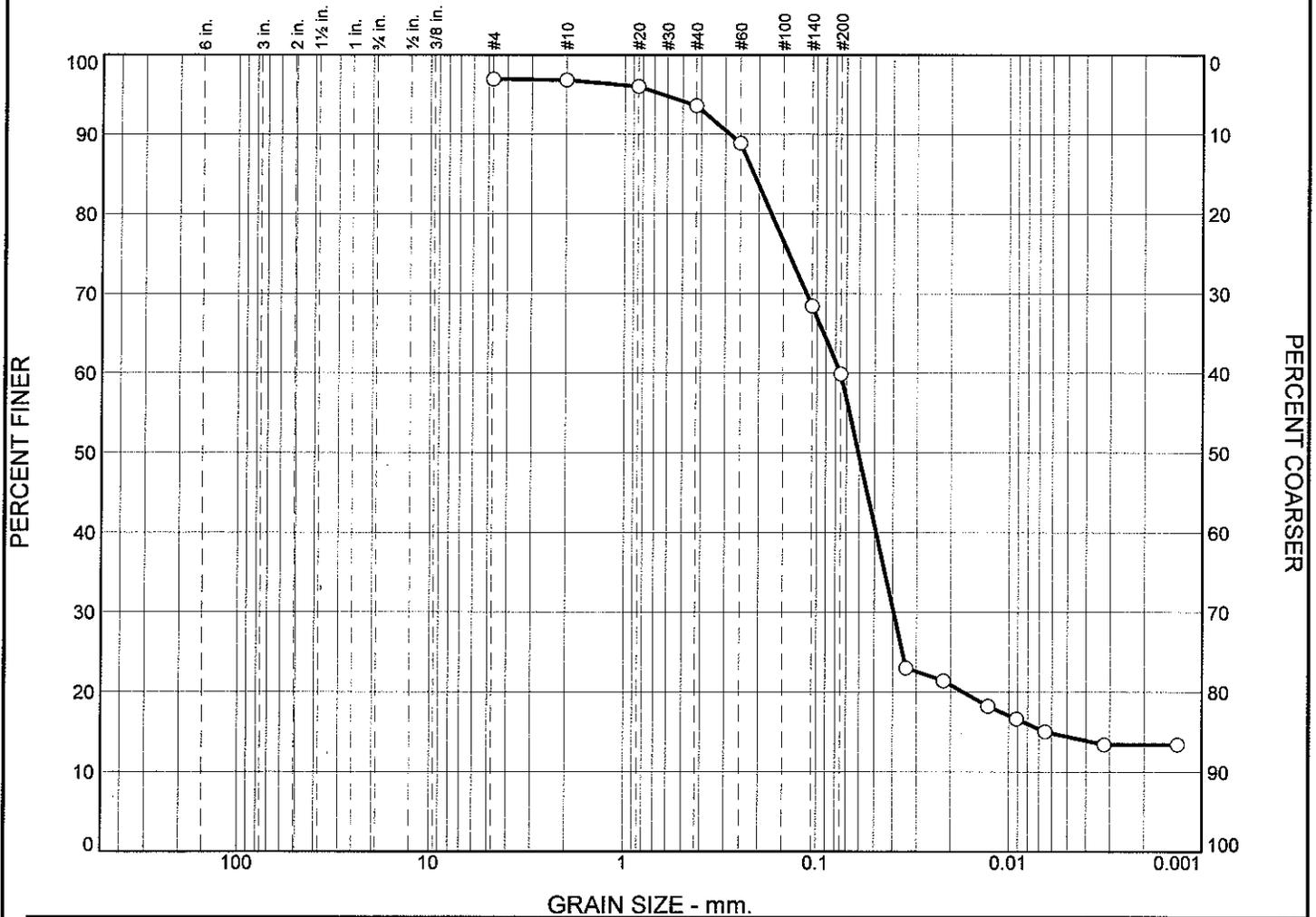
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.6      | 1.5     | 5.6  | 13.8 | 23.0 | 17.2    | 61.1  | 23.8 | 1.8  | 1.9  | 1.0     | 28.5  | 7.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0141          | 0.0365          | 0.0415          | 0.0537          | 0.1138          | 0.1539          | 0.2968          | 0.3690          | 0.5061          | 0.8334          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.77             | 10.92          | 1.33           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 0.1             | 0.6             | 2.0             | 5.3             | 16.6            | 20.9           | 28.7           | 3.3  | 3.5  | 2.1     | 13.8   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.2125          | 0.0753          | 0.0607          | 0.0395          | 0.0065          |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505311    <b>Sample Number:</b> L0912916-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912916  
**Location:** 505311  
**Sample Number:** L0912916-17  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 60.03                       | 0.00         | #4                 | 522.64                  | 520.81               | 97.0          | 3.0              |
|                             |              | #10                | 482.19                  | 482.11               | 96.8          | 3.2              |
|                             |              | #20                | 411.57                  | 411.09               | 96.0          | 4.0              |
|                             |              | #40                | 379.31                  | 377.86               | 93.6          | 6.4              |
|                             |              | #60                | 372.68                  | 369.84               | 88.9          | 11.1             |
|                             |              | #140               | 359.45                  | 347.17               | 68.4          | 31.6             |
|                             |              | #200               | 351.63                  | 346.51               | 59.9          | 40.1             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 59.9  
 Weight of hydrometer sample = 60.03  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0140         | 1.0144            | 0.0132 | 11.0 | 13.4       | 0.0340         | 23.0          | 77.0             |
| 5.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0217         | 21.4          | 78.6             |
| 15.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0128         | 18.2          | 81.8             |
| 30.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0091         | 16.6          | 83.4             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 15.0          | 85.0             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 13.4          | 86.6             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 13.4          | 86.6             |

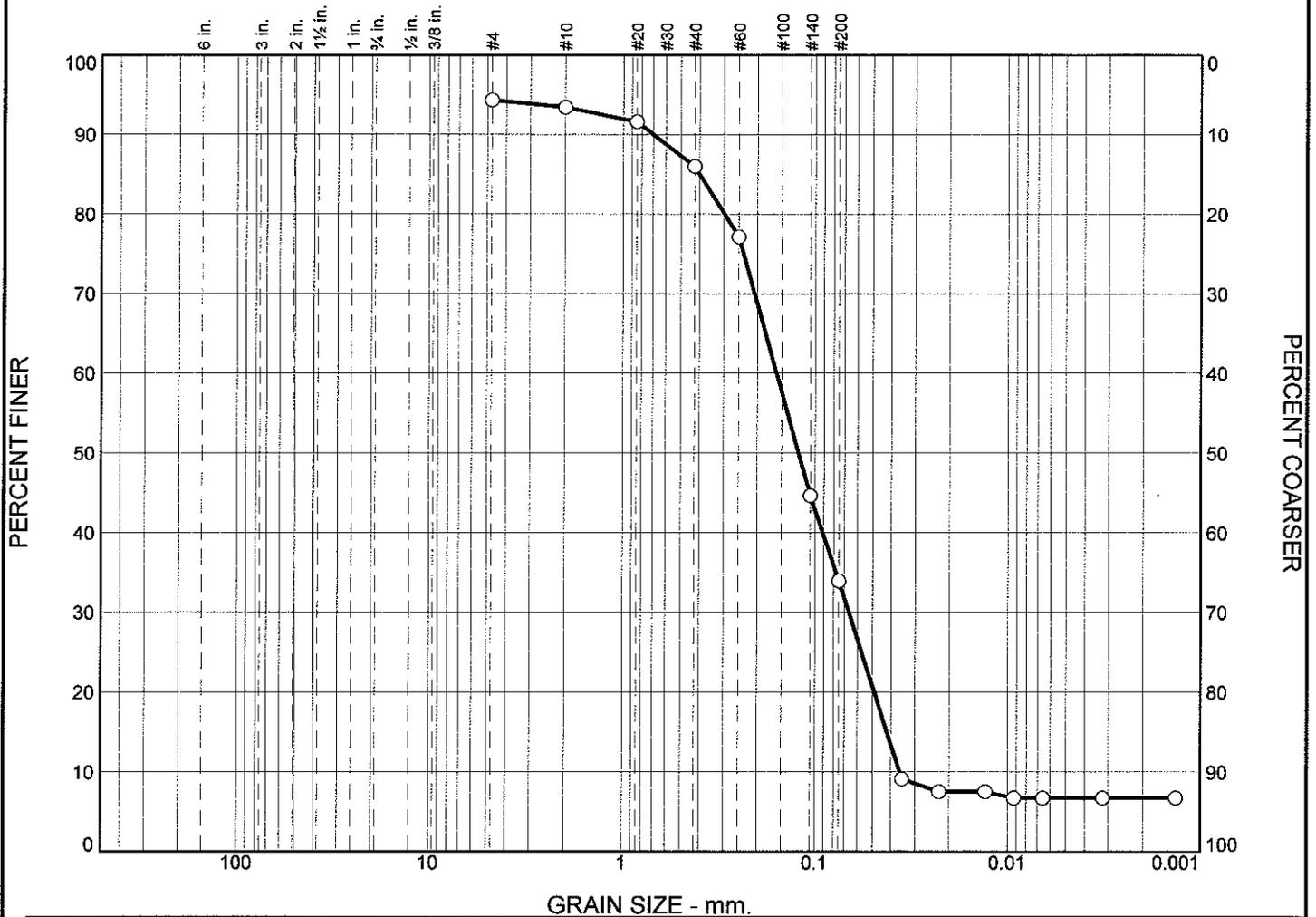
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.6     | 2.0  | 5.3  | 16.6 | 20.9    | 45.4  | 28.7 | 3.3  | 3.5  | 2.1     | 37.6  | 13.8 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0065 | 0.0172 | 0.0395 | 0.0607 | 0.0753 | 0.1723 | 0.2125 | 0.2837 | 0.6346 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.48                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| 0          |           |           | 0.8        | 1.5     | 4.6  | 10.2 | 26.2 | 22.9    | 19.3   | 1.2  | 0.8  | 0.0     | 6.7    |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|----|----|--------|--------|--------|--------|--------|--------|------|------|
| 0  |    | 0.4010 | 0.1590 | 0.1221 | 0.0665 | 0.0419 | 0.0360 | 0.77 | 4.42 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912916 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 505312 <b>Sample Number:</b> L0912916-18 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505312

Sample Number: L0912916-18

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 67.91                       | 0.00         | #4                 | 525.62                  | 521.77               | 94.3          | 5.7              |
|                             |              | #10                | 485.42                  | 484.81               | 93.4          | 6.6              |
|                             |              | #20                | 406.67                  | 405.42               | 91.6          | 8.4              |
|                             |              | #40                | 365.10                  | 361.28               | 86.0          | 14.0             |
|                             |              | #60                | 372.16                  | 366.16               | 77.1          | 22.9             |
|                             |              | #140               | 364.89                  | 342.82               | 44.6          | 55.4             |
|                             |              | #200               | 352.52                  | 345.25               | 33.9          | 66.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 33.9

Weight of hydrometer sample = 67.91

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 9.1           | 90.9             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 7.5           | 92.5             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 7.5           | 92.5             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 6.7           | 93.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 6.7           | 93.3             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 6.7           | 93.3             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 6.7           | 93.3             |

## Fractional Components

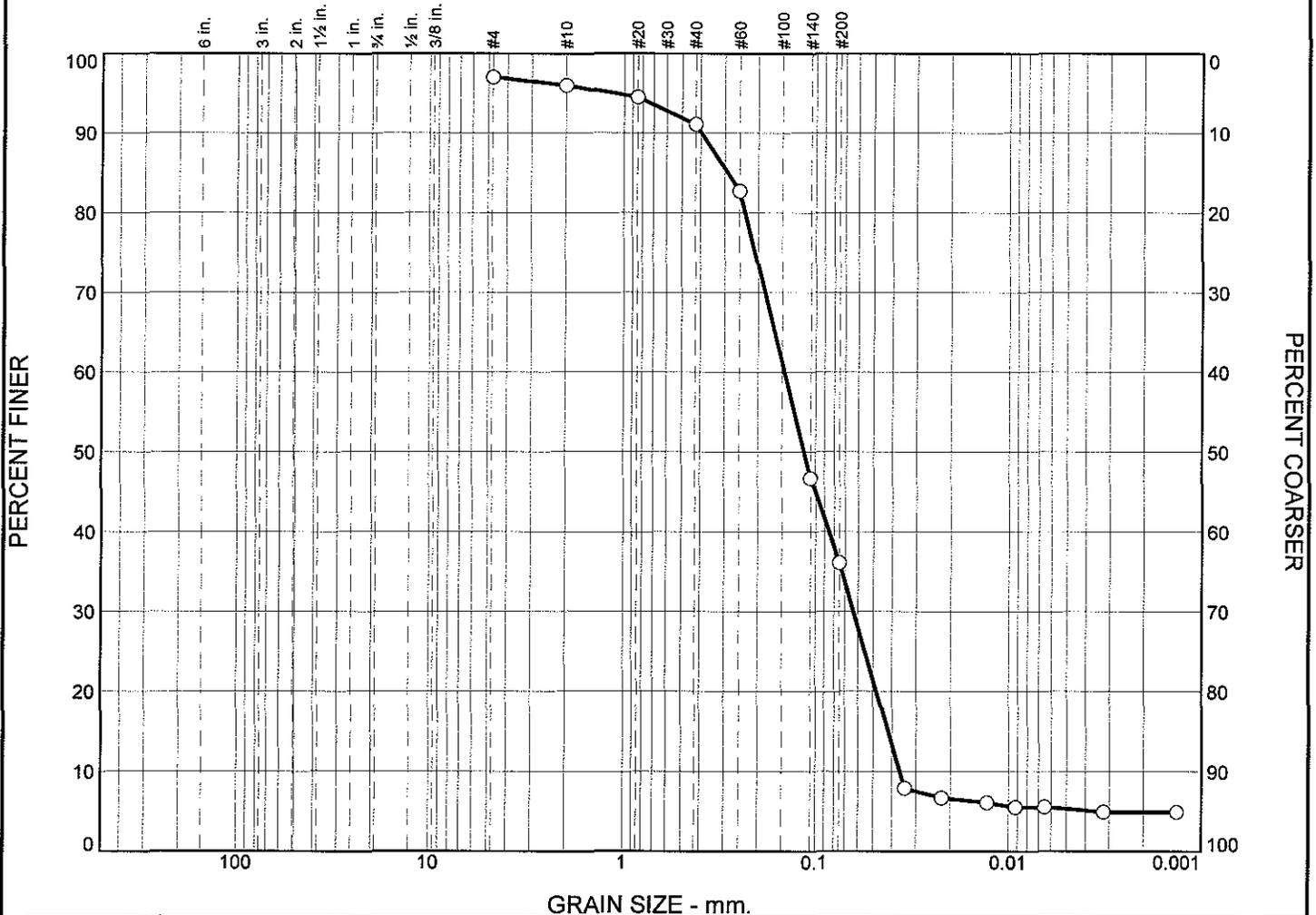
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 1.5     | 4.6  | 10.2 | 26.2 | 22.9    | 65.4  | 19.3 | 1.2  | 0.8  | 0.0     | 21.3  | 6.7  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| 0.0360 | 0.0419 | 0.0489 | 0.0665 | 0.1221 | 0.1590 | 0.2970 | 0.4010 | 0.6986 |     |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.93             | 4.42           | 0.77           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | %   | Sand     |         |      |      |      | Silt    |      |      | %   | Clay |
|---|----------|---|---------|---|---------|-----|----------|---------|------|------|------|---------|------|------|-----|------|
|   |          |   |         |   |         |     | Granules | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. |     |      |
| ○ |          |   |         |   |         | 0.8 | 1.2      | 2.9     | 9.2  | 29.1 | 24.1 | 21.9    | 1.3  | 0.8  | 0.4 | 5.1  |

| ⊗ | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.2887          | 0.1455          | 0.1147          | 0.0634          | 0.0419          | 0.0365          | 0.76           | 3.99           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505313    <b>Sample Number:</b> L0912916-19</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505313

Sample Number: L0912916-19

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 98.57                       | 0.00         | #4                 | 523.74                  | 520.81               | 97.0          | 3.0              |
|                             |              | #10                | 483.12                  | 482.11               | 96.0          | 4.0              |
|                             |              | #20                | 412.57                  | 411.09               | 94.5          | 5.5              |
|                             |              | #40                | 381.23                  | 377.86               | 91.1          | 8.9              |
|                             |              | #60                | 378.07                  | 369.84               | 82.7          | 17.3             |
|                             |              | #140               | 382.69                  | 347.17               | 46.7          | 53.3             |
|                             |              | #200               | 359.96                  | 349.51               | 36.1          | 63.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 36.1

Weight of hydrometer sample = 98.57

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 7.9           | 92.1             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0222         | 6.7           | 93.3             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0129         | 6.1           | 93.9             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 5.5           | 94.5             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 5.5           | 94.5             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 4.9           | 95.1             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 4.9           | 95.1             |

## Fractional Components

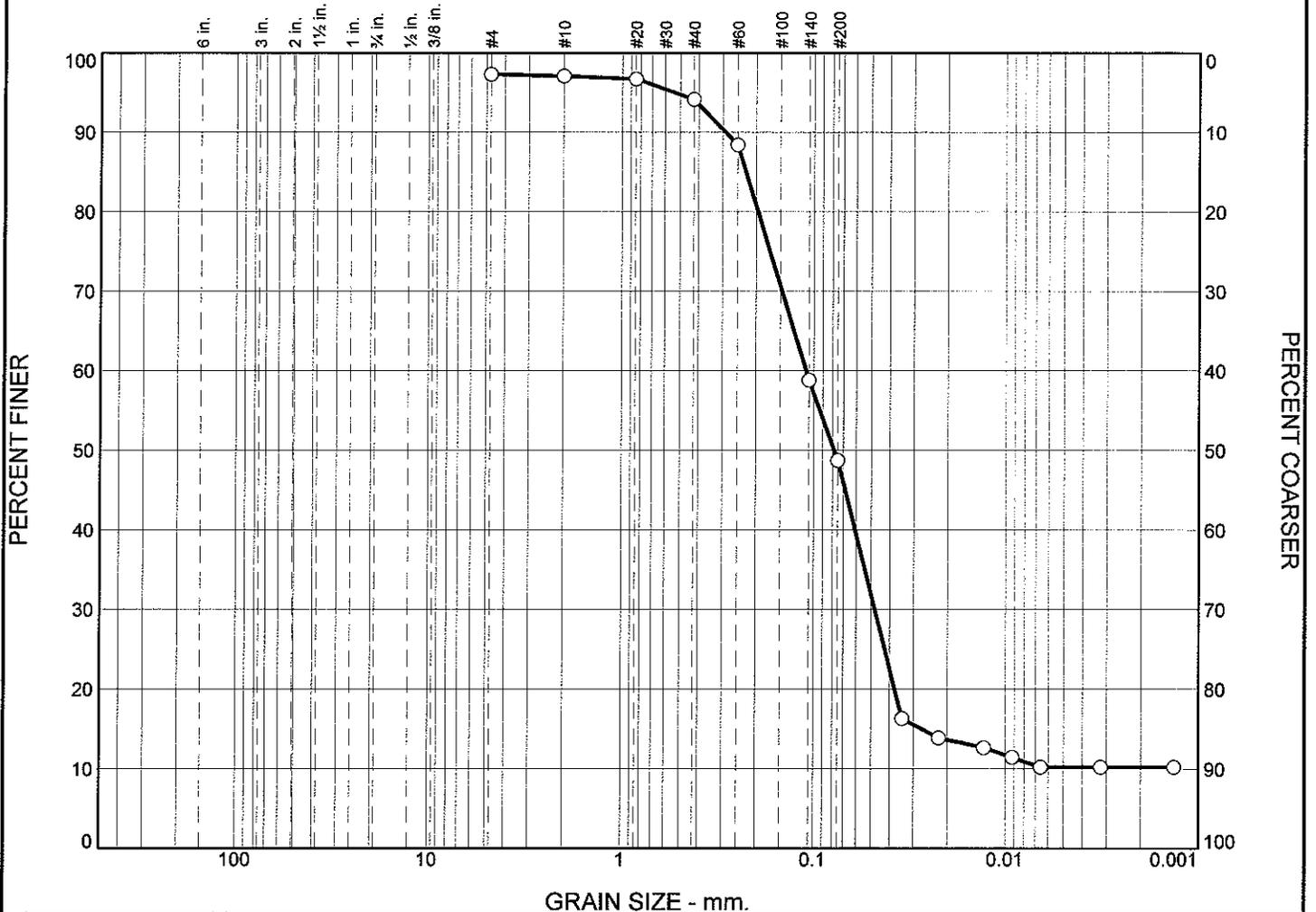
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 1.2     | 2.9  | 9.2  | 29.1 | 24.1    | 66.5  | 21.9 | 1.3  | 0.8  | 0.4     | 24.4  | 5.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0365          | 0.0419          | 0.0481          | 0.0634          | 0.1147          | 0.1455          | 0.2342          | 0.2887          | 0.3967          | 1.1294          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.72             | 3.99           | 0.76           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      | % Silt  |      |      |      | % Clay |         |
|------------|-----------|-----------|------------|---------|------|------|------|---------|------|------|------|--------|---------|
|            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| 0          |           |           | 0.2        | 0.3     | 2.1  | 6.3  | 23.9 | 23.3    | 25.5 | 2.6  | 2.3  | 0.6    | 10.2    |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10 | Cc | Cu |
|----|----|--------|--------|--------|--------|--------|-----|----|----|
| 0  |    | 0.2264 | 0.1097 | 0.0783 | 0.0478 | 0.0272 |     |    |    |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912916 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><b>Source of Sample:</b> 505326 <b>Sample Number:</b> L0912916-20 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912916  
 Location: 505326  
 Sample Number: L0912916-20  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 64.21                       | 0.00         | #4                 | 523.50                  | 521.77               | 97.3          | 2.7              |
|                             |              | #10                | 484.96                  | 484.81               | 97.1          | 2.9              |
|                             |              | #20                | 405.65                  | 405.42               | 96.7          | 3.3              |
|                             |              | #40                | 362.93                  | 361.28               | 94.1          | 5.9              |
|                             |              | #60                | 369.84                  | 366.16               | 88.4          | 11.6             |
|                             |              | #140               | 361.82                  | 342.82               | 58.8          | 41.2             |
|                             |              | #200               | 351.73                  | 345.25               | 48.7          | 51.3             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 48.7  
 Weight of hydrometer sample = 64.21  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 16.3          | 83.7             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0222         | 13.9          | 86.1             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0129         | 12.6          | 87.4             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 11.4          | 88.6             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0066         | 10.2          | 89.8             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 10.2          | 89.8             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 10.2          | 89.8             |

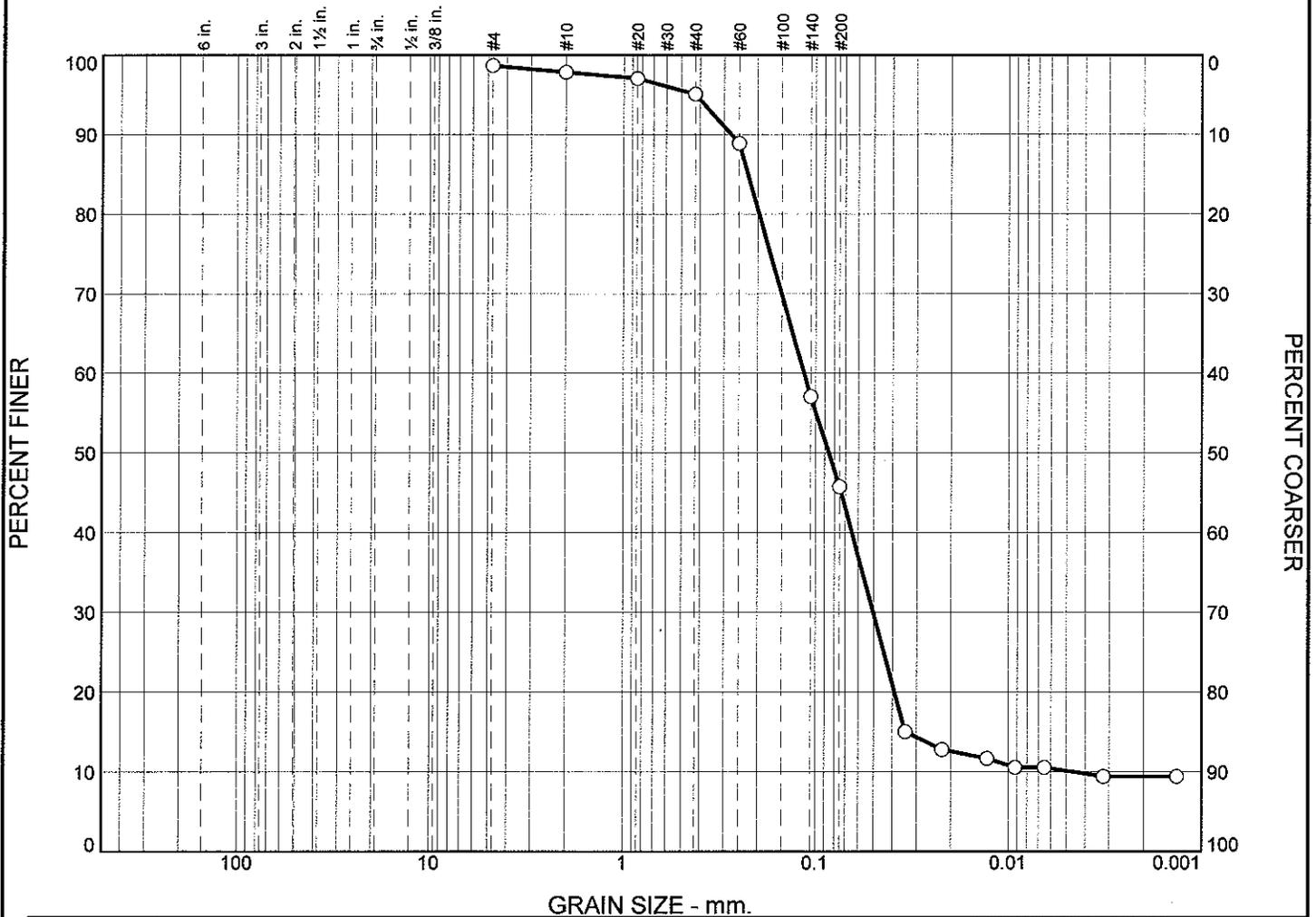
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 0.3     | 2.1  | 6.3  | 23.9 | 23.3    | 55.9  | 25.5 | 2.6  | 2.3  | 0.6     | 31.0  | 10.2 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0272          | 0.0376          | 0.0478          | 0.0783          | 0.1097          | 0.1959          | 0.2264          | 0.2896          | 0.5354          |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.52                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 0.7             | 0.6     | 1.7             | 6.6  | 25.7            | 24.6    | 24.1            | 2.4  | 1.6             | 0.8     | 9.7            |  |                |
| ⊗ | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 0.2252          |   | 0.1148          |         | 0.0854          |      | 0.0503          |         | 0.0342          |      | 0.0047          |         | 4.72           |  | 24.62          |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912916    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505326    <b>Sample Number:</b> WG383974-1</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912916

Location: 505326

Sample Number: WG383974-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.36                       | 0.00         | #4                 | 521.68                  | 520.81               | 98.7          | 1.3              |
|                             |              | #10                | 482.65                  | 482.11               | 97.8          | 2.2              |
|                             |              | #20                | 411.60                  | 411.09               | 97.1          | 2.9              |
|                             |              | #40                | 379.16                  | 377.86               | 95.1          | 4.9              |
|                             |              | #60                | 373.89                  | 369.84               | 88.9          | 11.1             |
|                             |              | #140               | 367.97                  | 347.17               | 57.1          | 42.9             |
|                             |              | #200               | 353.90                  | 346.51               | 45.7          | 54.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 45.7

Weight of hydrometer sample = 65.36

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 15.0          | 85.0             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0222         | 12.8          | 87.2             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0129         | 11.7          | 88.3             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 10.5          | 89.5             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 10.5          | 89.5             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 9.4           | 90.6             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 9.4           | 90.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.7      | 0.6     | 1.7  | 6.6  | 25.7 | 24.6    | 59.2  | 24.1 | 2.4  | 1.6  | 0.8     | 28.9  | 9.7  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0047 | 0.0342 | 0.0390 | 0.0503 | 0.0854 | 0.1148 | 0.1968 | 0.2252 | 0.2752 | 0.4223 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.49             | 24.62          | 4.72           |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised July 19, 2010 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

### **New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health** Certificate/Lab ID: 11627. **NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Rhode Island Department of Health** Certificate/Lab ID: LAO00299. **NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality** Certificate/Lab ID: T104704419-08-TX. **NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

*Air* (Organic Parameters: EPA TO-15)

**U.S. Army Corps of Engineers**

**Department of Defense** Certificate/Lab ID: L2217.01.

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

#### **Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.









# CHAIN OF CUSTODY



Serial No: 08  
16:19

Westborough, MA    Mansfield, MA  
TEL: 508-898-9220    TEL: 508-822-9300  
FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

## Client Information

Client: Woods Hole Group  
Address: 81 Technology Park Drive  
Falmouth, MA 02536  
Phone: 508-540-8080

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Fax: 508-540-1001     Standard     Rush (ONLY IF PRE-APPROVED)

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha    Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:  
Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 60912916

| Report Information                       | Data Deliverables                           | Billing Information                                     |
|--|---|---|
| <input type="checkbox"/> FAX             | <input checked="" type="checkbox"/> EMAIL   | <input checked="" type="checkbox"/> Same as Client info |
| <input checked="" type="checkbox"/> ADEx | <input type="checkbox"/> Add'l Deliverables | PO #:   |

## Regulatory Requirements/Report Limits

| State/Fed Program | Criteria |
|-------------------|----------|
| fed               |          |

| ANALYSIS                    |     |                                     |                                     |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br>Preservation<br><input type="checkbox"/> Lab to do<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |                          |
|-----------------------------|-----|-------------------------------------|-------------------------------------|--|--|--|--|--|--|--|--|--|--|--|-----------------|--------------------------|
| total PCB congeners NOAA 18 | TOC | grain size                          | archive                             |  |  |  |  |  |  |  |  |  |  |  |                 | Sample Specific Comments |
|                             |     | <input checked="" type="checkbox"/> |                                     |  |  |  |  |  |  |  |  |  |  |  | ben gs          | 1                        |
|                             |     | <input checked="" type="checkbox"/> |                                     |  |  |  |  |  |  |  |  |  |  |  | ben gs          | 1                        |
|                             |     | <input checked="" type="checkbox"/> |                                     |  |  |  |  |  |  |  |  |  |  |  | ben gs          | 1                        |
|                             |     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |  |  |  |  | sed chem        | 1                        |
|                             |     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |  |  |  |  | sed gs          | 1                        |
|                             |     |                                     | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |  |  |  |  | sed arch        | 1                        |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 17                             | 505311    | 9/25/09    | 16:40 | SE            | HC                 |
| 18                             | 505312    | 9/25/09    | 16:40 | SE            | HC                 |
| 19                             | 505313    | 9/25/09    | 16:40 | SE            | HC                 |
|                                | 505325    | 9/25/09    | 16:43 | SE            | HC                 |
| 20                             | 505326    | 9/25/09    | 16:43 | SE            | HC                 |
|                                | 505327    | 9/25/09    | 16:43 | SE            | HC                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                                  |                          |                             |                          |
|----------------------------------|--------------------------|-----------------------------|--------------------------|
| Relinquished By: <i>Heidi...</i> | Date/Time: 9/25/09 14:05 | Received By: <i>Paul...</i> | Date/Time: 9/25/09 19:00 |
| <i>Katherine...</i>              | 9/25/09 09:13            | <i>P. Gilbert</i>           | 9/25/09 9:25             |
| <i>P. Gilbert</i>                | 9/28/09 10:20            | <i>Alanna...</i>            | 9/28/09 10:20            |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912917  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912917-01                | 505411           | NEW BEDFORD, MA            | 09/25/09 17:48                  |
| L0912917-02                | 505412           | NEW BEDFORD, MA            | 09/25/09 17:46                  |
| L0912917-03                | 505413           | NEW BEDFORD, MA            | 09/25/09 17:48                  |
| L0912917-04                | 505426           | NEW BEDFORD, MA            | 09/25/09 17:48                  |
| L0912917-05                | 505511           | NEW BEDFORD, MA            | 09/27/09 09:48                  |
| L0912917-06                | 505512           | NEW BEDFORD, MA            | 09/27/09 10:20                  |
| L0912917-07                | 505513           | NEW BEDFORD, MA            | 09/27/09 10:30                  |
| L0912917-08                | 505526           | NEW BEDFORD, MA            | 09/27/09 10:03                  |
| L0912917-09                | 505611           | NEW BEDFORD, MA            | 09/27/09 08:23                  |
| L0912917-10                | 505612           | NEW BEDFORD, MA            | 09/27/09 08:42                  |
| L0912917-11                | 505613           | NEW BEDFORD, MA            | 09/27/09 08:45                  |
| L0912917-12                | 505626           | NEW BEDFORD, MA            | 09/27/09 08:36                  |
| L0912917-13                | 505711           | NEW BEDFORD, MA            | 09/25/09 16:48                  |
| L0912917-14                | 505712           | NEW BEDFORD, MA            | 09/25/09 17:15                  |
| L0912917-15                | 505713           | NEW BEDFORD, MA            | 09/25/09 17:32                  |
| L0912917-16                | 505726           | NEW BEDFORD, MA            | 09/25/09 17:00                  |
| L0912917-17                | 505811           | NEW BEDFORD, MA            | 09/28/09 09:02                  |
| L0912917-18                | 505812           | NEW BEDFORD, MA            | 09/28/09 09:11                  |
| L0912917-19                | 505813           | NEW BEDFORD, MA            | 09/28/09 09:16                  |
| L0912917-20                | 505826           | NEW BEDFORD, MA            | 09/28/09 09:08                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 23, 2009. The report was ammended to include revised Grain Size data.

The WG383974-1 Laboratory Duplicate RPD is outside the acceptance criteria for sieve, gravel(111%),% very coarse sand(67%),% coarse sand(21%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

**Case Narrative (continued)**

The WG383975-1 Laboratory Duplicate RPD is outside the acceptance criteria for sieve,% medium sand(29%),% fine sand(43%),silt(23%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-01  
**Client ID:** 505411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 17:48  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.80   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 17.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 23.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.5   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 5.50   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-02  
**Client ID:** 505412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 17:46  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.50   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 13.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 14.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 22.3   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.40   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.60   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-03  
**Client ID:** 505413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 17:48  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.70   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.70   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.4   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.0   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 18.0   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.9   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.90   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-04  
**Client ID:** 505426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 17:48  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.50   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.50   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.4   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.3   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.40   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-05  
**Client ID:** 505511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 09:48  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 8.40   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 9.80   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 14.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.5   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.00   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 7.40   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.4   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-06  
**Client ID:** 505512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.70   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 10.3   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 24.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 33.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.90   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 6.20   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 10.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-07  
**Client ID:** 505513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:30  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.40   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 11.4   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 27.0   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 33.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.00   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 8.80   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.50   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-08  
**Client ID:** 505526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 10:03  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 6.20   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 12.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 23.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 27.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.70   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.90   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 10.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.70   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-09  
**Client ID:** 505611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:23  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.500  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.80   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 16.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 15.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 22.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.9   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-10  
**Client ID:** 505612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:42  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.40   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 13.0   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.4   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.9   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 20.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.3   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-11  
**Client ID:** 505613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:45  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 14.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 15.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 21.0   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-12  
**Client ID:** 505626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/27/09 08:36  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.80   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 12.9   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 12.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 13.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.90   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 25.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.20   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-13  
**Client ID:** 505711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 16:48  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.00   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 20.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-14  
**Client ID:** 505712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 17:15  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.50   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 19.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.9   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 18.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.80   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-15  
**Client ID:** 505713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 17:32  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.70   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 20.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 25.9   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 19.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 17.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.60   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-16  
**Client ID:** 505726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/25/09 17:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 21.6   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.3   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.9   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 16.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.00   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-17  
**Client ID:** 505811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 09:02  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.20   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.90   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 23.4   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 32.3   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.600  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 25.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.10   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.600  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-18  
**Client ID:** 505812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 09:11  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.20   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 21.7   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 50.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 4.30   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.100  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | ND     |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-19  
**Client ID:** 505813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 09:16  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.00   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.90   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 23.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 50.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 14.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 3.60   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.200  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | ND     |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912917-20  
**Client ID:** 505826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 09:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.600  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.40   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 16.8   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 49.1   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 16.2   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.80   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 5.20   |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.800  |           | %     | 0.100 | 1               | -             | 10/12/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912917

**Report Date:** 02/03/10

| Parameter   | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---------------|------------------|-------|-----|------|------------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-07,09-11,13-20 QC Batch ID: WG383974-1 QC Sample: L0912916-20 Client ID: DUP Sample</b> |               |                  |       |     |      |            |
| Gravel (>2.00mm)  | 0.2           | 0.700            | %     | 111 | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)   | 0.3           | 0.600            | %     | 67  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)  | 2.1           | 1.70             | %     | 21  | Q    | 20         |
| Medium Sand (0.25-0.50 mm)  | 6.3           | 6.60             | %     | 5   |      | 20         |
| Fine Sand (0.125-0.25 mm)   | 23.9          | 25.7             | %     | 7   |      | 20         |
| Very Fine Sand (0.063-0.125 mm)   | 23.3          | 24.6             | %     | 5   |      | 20         |
| Silt - (1.95-62.5 um)   | 31.0          | 28.9             | %     | 7   |      | 20         |
| Clay - (<1.95 um)   | 10.2          | 9.70             | %     | 5   |      | 20         |
| <b>Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 08,12 QC Batch ID: WG383975-1 QC Sample: L0912917-12 Client ID: 505626</b>                 |               |                  |       |     |      |            |
| Gravel (>2.00mm)  | 4.8           | 4.40             | %     | 9   |      | 20         |
| Very Coarse Sand (1.00-2.00 mm)   | 12.9          | 13.5             | %     | 5   |      | 20         |
| Coarse Sand (0.50-1.00 mm)  | 12.8          | 11.3             | %     | 12  |      | 20         |
| Medium Sand (0.25-0.50 mm)  | 13.2          | 9.90             | %     | 29  | Q    | 20         |
| Fine Sand (0.125-0.25 mm)   | 9.9           | 6.40             | %     | 43  | Q    | 20         |
| Very Fine Sand (0.063-0.125 mm)   | 11.7          | 10.2             | %     | 14  |      | 20         |
| Silt - (1.95-62.5 um)   | 25.6          | 32.2             | %     | 23  | Q    | 20         |
| Clay - (<1.95 um)   | 7.2           | 8.70             | %     | 19  |      | 20         |

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912917

Report Date: 02/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

## Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| D      | Absent       |
| A      | Absent       |
| F      | Absent       |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912917-01A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-02A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-03A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-04A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-05A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-06A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-07A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-08A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912917

Report Date: 02/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912917-09A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-10A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-11A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-12A | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-12B | Glass 250ml unpreserved | F      | N/A | 2.0        | Y    | Absent | A2-DUP()   |
| L0912917-13A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-14A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-15A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-16A | Glass 250ml unpreserved | D      | N/A | 2.5        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-17A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-18A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING**Project Number:** TO-0018**Lab Number:** L0912917**Report Date:** 02/03/10**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp<br>deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|---------------|------|--------|--|
| L0912917-19A | Glass 250ml unpreserved | A      | N/A | 2.0           | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912917-20A | Glass 250ml unpreserved | A      | N/A | 2.0           | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCS D** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MS D** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912917  
**Report Date:** 02/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912917  
**Location:** 505411  
**Sample Number:** L0912917-01  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 87.42                       | 0.00         | #4                 | 522.50                  | 521.77               | 99.2          | 0.8              |
|                             |              | #10                | 489.33                  | 484.81               | 94.0          | 6.0              |
|                             |              | #20                | 414.87                  | 405.42               | 83.2          | 16.8             |
|                             |              | #40                | 378.47                  | 361.28               | 63.5          | 36.5             |
|                             |              | #60                | 382.42                  | 366.16               | 44.9          | 55.1             |
|                             |              | #140               | 370.44                  | 342.82               | 13.3          | 86.7             |
|                             |              | #200               | 349.56                  | 345.25               | 8.4           | 91.6             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 8.4  
 Weight of hydrometer sample = 87.42  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0360         | 1.3           | 98.7             |
| 5.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0228         | 1.3           | 98.7             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 1.3           | 98.7             |
| 30.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0094         | 1.1           | 98.9             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 1.1           | 98.9             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 1.1           | 98.9             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 1.1           | 98.9             |

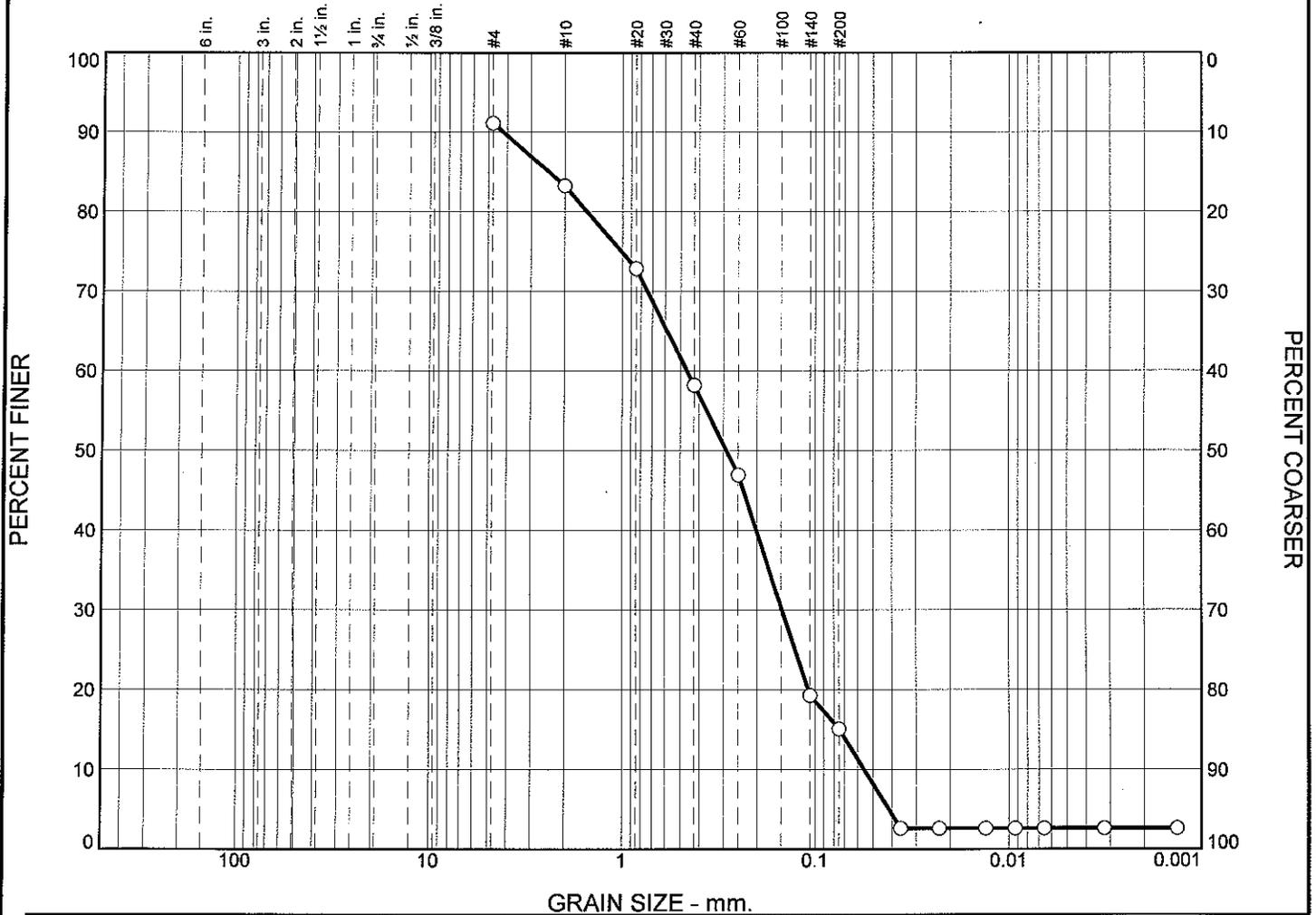
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.1      | 8.8     | 17.1 | 23.2 | 25.5 | 12.8    | 87.4  | 5.3  | 0.0  | 0.2  | 0.0     | 5.5   | 1.1  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0839 | 0.1109 | 0.1271 | 0.1667 | 0.2890 | 0.3844 | 0.7597 | 0.9814 | 1.4578 | 2.3664 |

| Fineness Modulus | Cu   | Cc   |
|------------------|------|------|
| 1.68             | 4.58 | 0.86 |

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % Boulders | % Cobbles | % Pebbles |  | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|------------|-----------|-----------|--|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|            |           |           |  |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| 0          |           |           |  | 6.3        | 8.5     | 13.2 | 14.7 | 22.3 | 12.6    | 9.4    | 0.0  | 0.0  | 0.0     | 2.6    |

| LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| 0  |    | 2.4235          | 0.4629          | 0.2892          | 0.1479          | 0.0747          | 0.0556          | 0.85           | 8.32           |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 505412    <b>Sample Number:</b> L0912917-02</p> | <p><b>Remarks:</b></p> |
|---|------------------------|

**Alpha Analytical**  
Mansfield, MA

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505412

Sample Number: L0912917-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 77.57                       | 0.00         | #4                 | 527.70                  | 520.81               | 91.1          | 8.9              |
|                             |              | #10                | 488.21                  | 482.11               | 83.3          | 16.7             |
|                             |              | #20                | 419.16                  | 411.09               | 72.9          | 27.1             |
|                             |              | #40                | 389.23                  | 377.86               | 58.2          | 41.8             |
|                             |              | #60                | 378.60                  | 369.84               | 46.9          | 53.1             |
|                             |              | #140               | 368.60                  | 347.17               | 19.3          | 80.7             |
|                             |              | #200               | 349.41                  | 346.15               | 15.1          | 84.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 15.1

Weight of hydrometer sample = 77.57

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0360         | 2.6           | 97.4             |
| 5.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0228         | 2.6           | 97.4             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 2.6           | 97.4             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 2.6           | 97.4             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 2.6           | 97.4             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 2.6           | 97.4             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 2.6           | 97.4             |

## Fractional Components

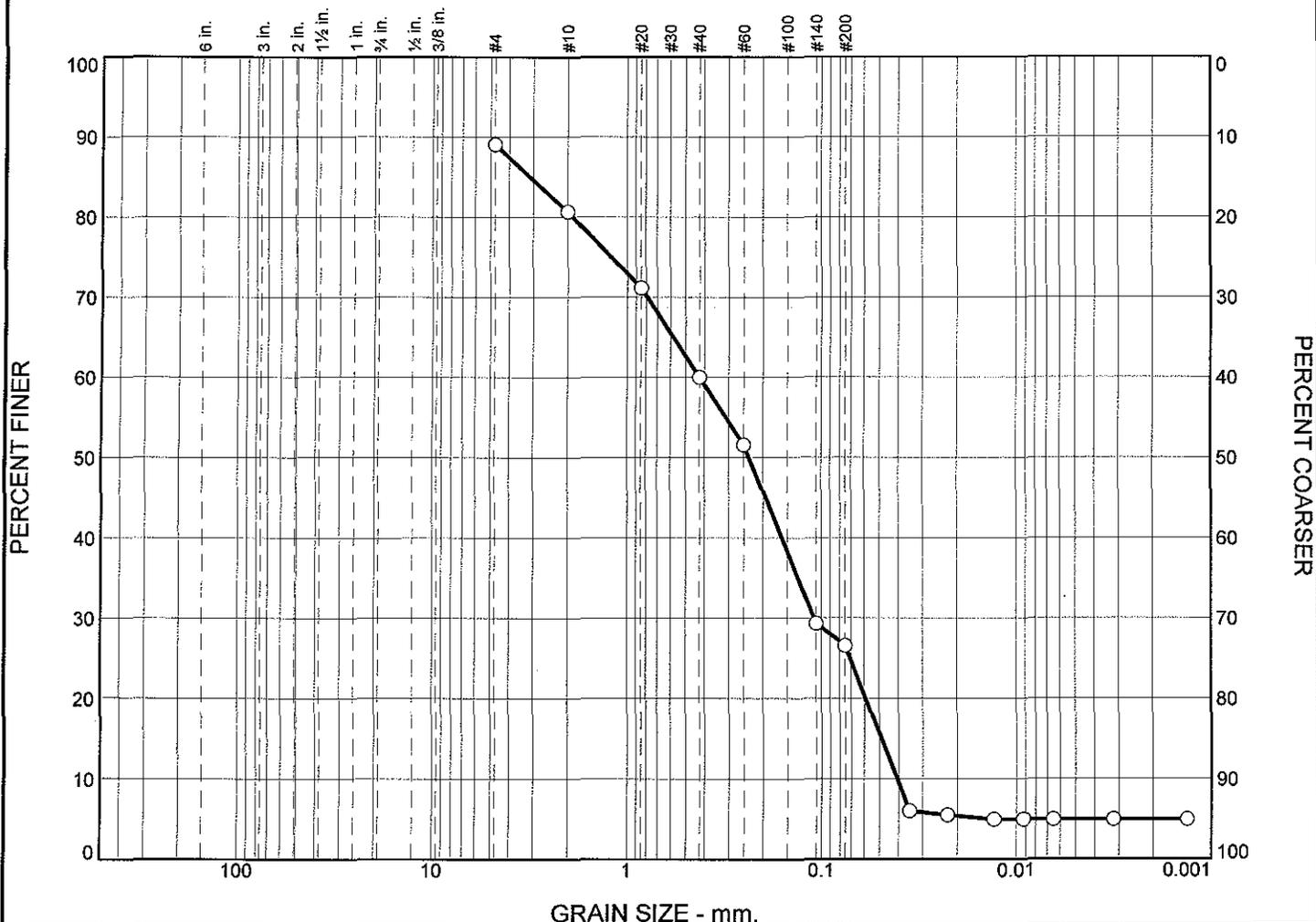
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.3      | 8.5     | 13.2 | 14.7 | 22.3 | 12.6    | 71.3  | 9.4  | 0.0  | 0.0  | 0.0     | 9.4   | 2.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0556          | 0.0747          | 0.1084          | 0.1479          | 0.2892          | 0.4629          | 1.5304          | 2.4235          | 4.2005          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.01             | 8.32           | 0.85           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       |                 | % Granules      | % Sand          |                 |                 |                |                | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|------|---------|--------|
|   |            |           |                 |                 |                 | V. Crs.         | Crs.            | Med.            | Fine           | V. Fine        | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |                 |                 | 6.7             | 7.7             | 10.4            | 11.0            | 18.0           | 11.9           | 15.8   | 0.8  | 0.2  |         | 4.9    |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |      |      |         |        |
| ○ |            |           | 3.1202          | 0.4245          | 0.2352          | 0.1088          | 0.0489          | 0.0406          | 0.69           | 10.45          |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505413    <b>Sample Number:</b> L0912917-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505413

Sample Number: L0912917-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 80.86                       | 0.00         | #4                 | 530.61                  | 521.77               | 89.1          | 10.9             |
|                             |              | #10                | 491.58                  | 484.81               | 80.7          | 19.3             |
|                             |              | #20                | 413.13                  | 405.42               | 71.2          | 28.8             |
|                             |              | #40                | 370.29                  | 361.28               | 60.0          | 40.0             |
|                             |              | #60                | 372.98                  | 366.16               | 51.6          | 48.4             |
|                             |              | #140               | 360.82                  | 342.82               | 29.3          | 70.7             |
|                             |              | #200               | 347.47                  | 345.25               | 26.6          | 73.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 26.6

Weight of hydrometer sample = 80.86

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 6.0           | 94.0             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 5.5           | 94.5             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 4.9           | 95.1             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0092         | 4.9           | 95.1             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0065         | 4.9           | 95.1             |
| 250.00              | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0032         | 4.9           | 95.1             |
| 1440.00             | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0013         | 4.9           | 95.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.7      | 7.7     | 10.4 | 11.0 | 18.0 | 11.9    | 59.0  | 15.8 | 0.8  | 0.2  |         | 16.8  | 4.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0406          | 0.0489          | 0.0588          | 0.1088          | 0.2352          | 0.4245          | 1.8791          | 3.1202          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.95             | 10.45          | 0.69           |



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505426

Sample Number: L0912917-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 85.71                       | 0.00         | #4                 | 523.58                  | 520.81               | 96.8          | 3.2              |
|                             |              | #10                | 486.94                  | 482.11               | 91.1          | 8.9              |
|                             |              | #20                | 417.99                  | 411.09               | 83.1          | 16.9             |
|                             |              | #40                | 390.38                  | 377.86               | 68.5          | 31.5             |
|                             |              | #60                | 382.05                  | 369.84               | 54.2          | 45.8             |
|                             |              | #140               | 374.16                  | 347.17               | 22.7          | 77.3             |
|                             |              | #200               | 351.38                  | 346.51               | 17.1          | 82.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 17.1

Weight of hydrometer sample = 85.71

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0360         | 2.7           | 97.3             |
| 5.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0228         | 2.7           | 97.3             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 2.7           | 97.3             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 2.7           | 97.3             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 2.4           | 97.6             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 2.4           | 97.6             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 2.4           | 97.6             |

## Fractional Components

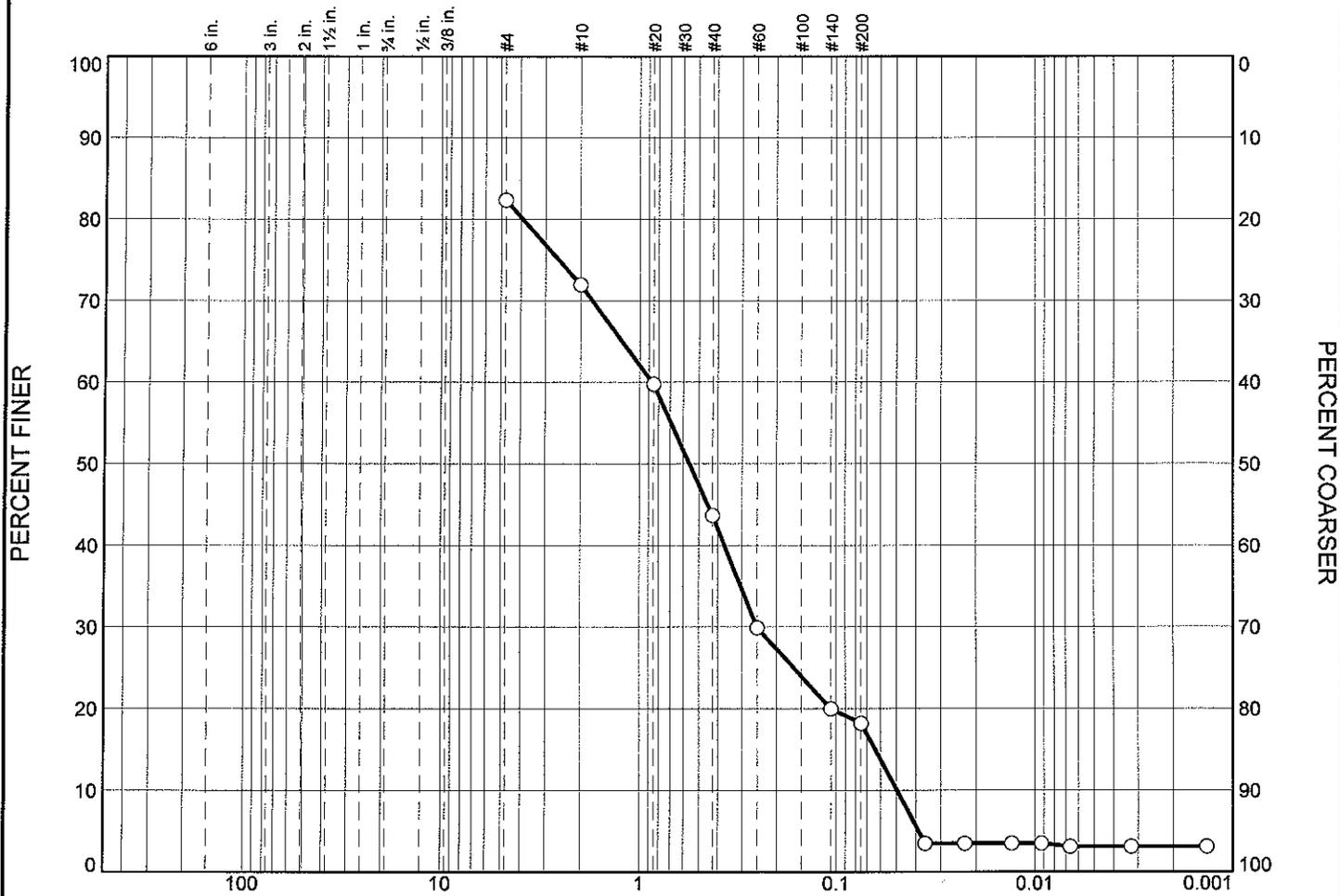
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.5      | 6.5     | 12.7 | 17.7 | 25.4 | 15.3    | 77.6  | 10.8 | 0.0  | 0.2  | 0.1     | 11.1  | 2.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0523          | 0.0675          | 0.0897          | 0.1292          | 0.2228          | 0.3099          | 0.7343          | 1.0422          | 1.7731          | 3.6209          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.55             | 5.93           | 1.03           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles | % | Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |     |
|---|----------|---|---------|---|---------|---|----------|---------|------|------|------|---------|--------|------|------|---------|--------|-----|
|   |          |   |         |   |         |   |          | V. Crs. | Cr.  | Med. | Fine | V. Fine | Cr.    | Med. | Fine | V. Fine |        |     |
| ○ |          |   |         |   |         |   | 8.4      | 9.8     | 14.7 | 17.5 | 8.0  | 7.4     | 11.0   | 0.0  | 0.2  | 0.2     |        | 3.1 |

| ⊗ | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    |                 | 0.8657          | 0.5587          | 0.2511          | 0.0639          | 0.0498          | 1.46           | 17.38          |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505511    <b>Sample Number:</b> L0912917-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |
| <p><b>Figure</b></p>  |                        |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505511

Sample Number: L0912917-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.92                       | 0.00         | #4                 | 534.11                  | 521.77               | 82.4          | 17.6             |
|                             |              | #10                | 492.09                  | 484.81               | 71.9          | 28.1             |
|                             |              | #20                | 413.95                  | 405.42               | 59.7          | 40.3             |
|                             |              | #40                | 372.53                  | 361.28               | 43.6          | 56.4             |
|                             |              | #60                | 375.78                  | 366.16               | 29.9          | 70.1             |
|                             |              | #140               | 349.76                  | 342.82               | 20.0          | 80.0             |
|                             |              | #200               | 346.49                  | 345.25               | 18.2          | 81.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 18.2

Weight of hydrometer sample = 69.92

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0360         | 3.5           | 96.5             |
| 5.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0228         | 3.5           | 96.5             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 3.5           | 96.5             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 3.5           | 96.5             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 3.1           | 96.9             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 3.1           | 96.9             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 3.1           | 96.9             |

## Fractional Components

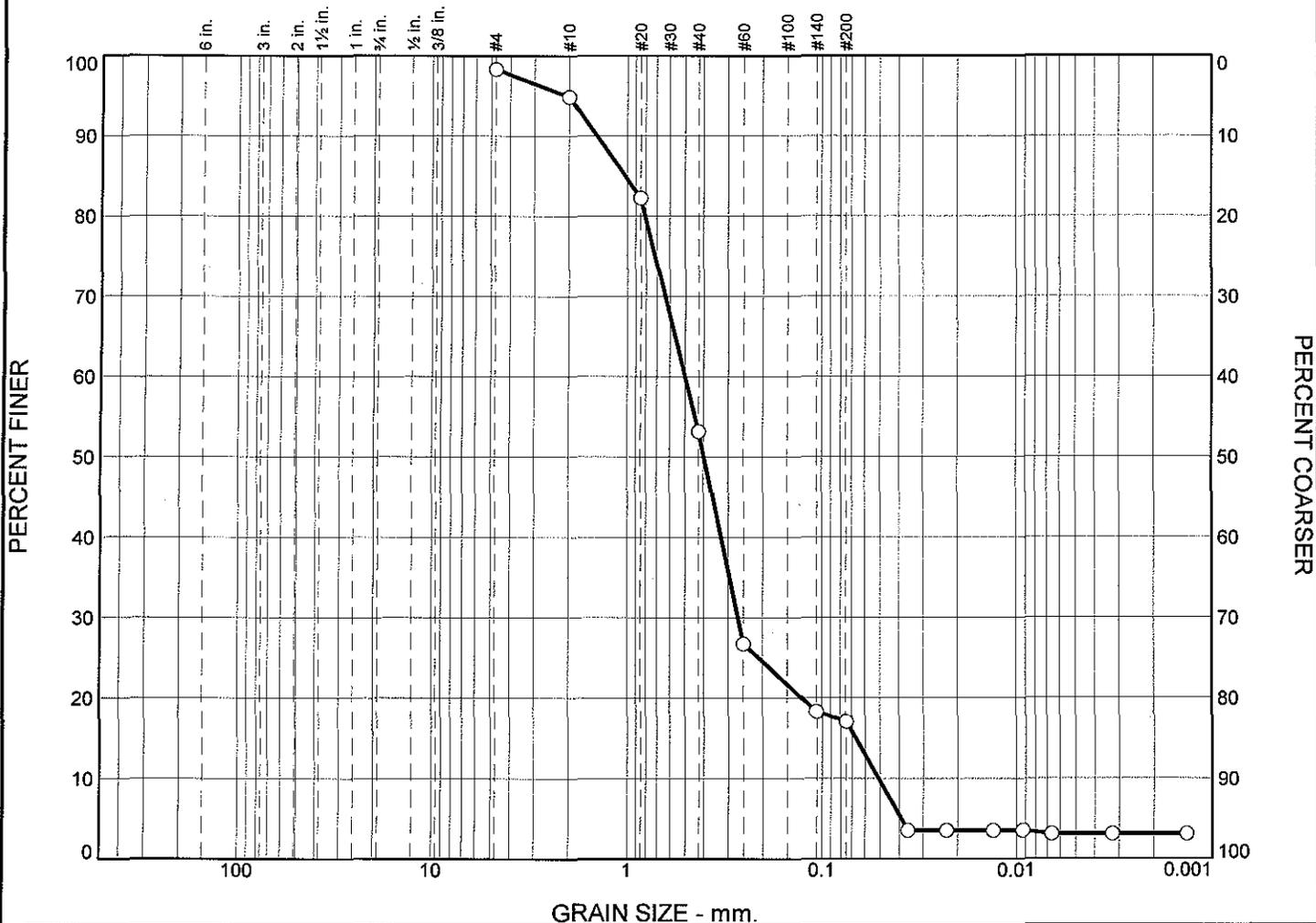
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 8.4      | 9.8     | 14.7 | 17.5 | 8.0  | 7.4     | 57.4  | 11.0 | 0.0  | 0.2  | 0.2     | 11.4  | 3.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0498          | 0.0639          | 0.1063          | 0.2511          | 0.5587          | 0.8657          | 3.9071          |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.69             | 17.38          | 1.46           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 2.7             | 10.3            | 24.6            | 33.2            | 6.9             | 6.2            | 10.2           | 0.0  | 0.2  | 0.2     | 3.1    |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 1.0250          | 0.5002          | 0.3988          | 0.2668          | 0.0671          | 0.0511          | 2.78           | 9.78           |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505512    <b>Sample Number:</b> L0912917-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505512

Sample Number: L0912917-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 64.96                       | 0.00         | #4                 | 521.90                  | 520.81               | 98.3          | 1.7              |
|                             |              | #10                | 484.35                  | 482.11               | 94.9          | 5.1              |
|                             |              | #20                | 419.30                  | 411.09               | 82.2          | 17.8             |
|                             |              | #40                | 396.74                  | 377.86               | 53.2          | 46.8             |
|                             |              | #60                | 387.00                  | 369.84               | 26.8          | 73.2             |
|                             |              | #140               | 352.67                  | 347.17               | 18.3          | 81.7             |
|                             |              | #200               | 347.31                  | 346.51               | 17.1          | 82.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 17.1

Weight of hydrometer sample = 64.96

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0360         | 3.5           | 96.5             |
| 5.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0228         | 3.5           | 96.5             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 3.5           | 96.5             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 3.5           | 96.5             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 3.1           | 96.9             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 3.1           | 96.9             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 3.1           | 96.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.7      | 10.3    | 24.6 | 33.2 | 6.9  | 6.2     | 81.2  | 10.2 | 0.0  | 0.2  | 0.2     | 10.6  | 3.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0511          | 0.0671          | 0.1261          | 0.2668          | 0.3988          | 0.5002          | 0.8059          | 1.0250          | 1.4379          | 2.0643          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.94             | 9.78           | 2.78           |



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505513

Sample Number: L0912917-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 67.10                       | 0.00         | #4                 | 522.96                  | 521.77               | 98.2          | 1.8              |
|                             |              | #10                | 487.65                  | 484.81               | 94.0          | 6.0              |
|                             |              | #20                | 414.89                  | 405.42               | 79.9          | 20.1             |
|                             |              | #40                | 382.54                  | 361.28               | 48.2          | 51.8             |
|                             |              | #60                | 383.44                  | 366.16               | 22.4          | 77.6             |
|                             |              | #140               | 347.91                  | 342.82               | 14.9          | 85.1             |
|                             |              | #200               | 345.80                  | 345.25               | 14.0          | 86.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 14.0

Weight of hydrometer sample = 67.10

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0360         | 2.8           | 97.2             |
| 5.00                | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0228         | 2.8           | 97.2             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 2.8           | 97.2             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 2.8           | 97.2             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 2.5           | 97.5             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 2.5           | 97.5             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 2.5           | 97.5             |

## Fractional Components

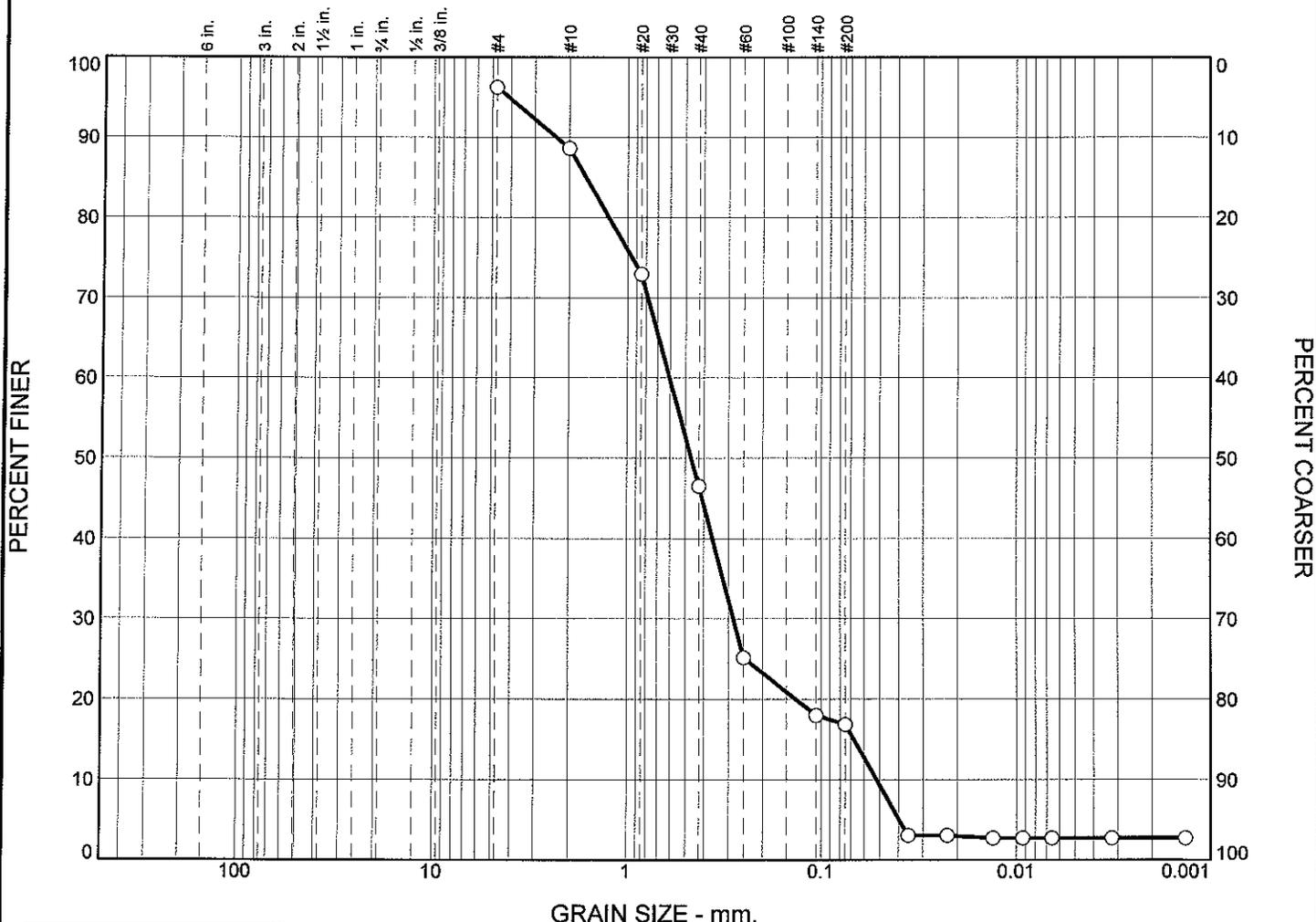
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.4      | 11.4    | 27.0 | 33.2 | 6.1  | 5.0     | 82.7  | 8.5  | 0.0  | 0.2  | 0.1     | 8.8   | 2.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0576          | 0.1077          | 0.1896          | 0.2921          | 0.4421          | 0.5502          | 0.8562          | 1.1593          | 1.5699          | 2.4565          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.08             | 9.55           | 2.69           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles |        | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|--------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |        |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           |        | 6.2        | 12.7    | 23.2   | 27.6   | 5.7  | 5.9     | 10.5   | 0.2  | 0.1  | 0.0     | 2.7    |
| ⊗ | LL         | PL        | D85       | D60    | D50        | D30     | D15    | D10    | Cc   | Cu      |        |      |      |         |        |
| ○ |            |           | 1.6408    | 0.6054 | 0.4657     | 0.2821  | 0.0679 | 0.0519 | 2.53 | 11.67   |        |      |      |         |        |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

**Project No.** L0912917    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 505526    **Sample Number:** L0912917-08  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912917  
 Location: 505526  
 Sample Number: L0912917-08  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 83.31                       | 0.00         | #4                 | 523.92                  | 520.81               | 96.3          | 3.7              |
|                             |              | #10                | 488.47                  | 482.11               | 88.6          | 11.4             |
|                             |              | #20                | 424.17                  | 411.09               | 72.9          | 27.1             |
|                             |              | #40                | 399.87                  | 377.86               | 46.5          | 53.5             |
|                             |              | #60                | 387.65                  | 369.84               | 25.1          | 74.9             |
|                             |              | #140               | 353.13                  | 347.17               | 18.0          | 82.0             |
|                             |              | #200               | 347.46                  | 346.51               | 16.8          | 83.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 16.8  
 Weight of hydrometer sample = 83.31  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0357         | 3.0           | 97.0             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 3.0           | 97.0             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 2.7           | 97.3             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 2.7           | 97.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 2.7           | 97.3             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 2.7           | 97.3             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 2.7           | 97.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 6.2      | 12.7    | 23.2 | 27.6 | 5.7  | 5.9     | 75.1  | 10.5 | 0.2  | 0.1  | 0.0     | 10.8  | 2.7  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0519          | 0.0679          | 0.1350          | 0.2821          | 0.4657          | 0.6054          | 1.2494          | 1.6408          | 2.3351          | 4.1148          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.22             | 11.67          | 2.53           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505611

Sample Number: L0912917-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 37.80                       | 0.00         | #4                 | 521.95                  | 521.77               | 99.5          | 0.5              |
|                             |              | #10                | 485.04                  | 484.81               | 98.9          | 1.1              |
|                             |              | #20                | 408.62                  | 405.42               | 90.4          | 9.6              |
|                             |              | #40                | 368.64                  | 361.28               | 71.0          | 29.0             |
|                             |              | #60                | 370.20                  | 366.16               | 60.3          | 39.7             |
|                             |              | #140               | 348.23                  | 342.82               | 46.0          | 54.0             |
|                             |              | #200               | 346.84                  | 345.25               | 41.8          | 58.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 41.8

Weight of hydrometer sample = 37.80

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0344         | 23.7          | 76.3             |
| 5.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0219         | 22.0          | 78.0             |
| 15.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0129         | 18.4          | 81.6             |
| 30.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0092         | 16.6          | 83.4             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0066         | 14.9          | 85.1             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0032         | 14.9          | 85.1             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0  | 15.0       | 0.0013         | 14.9          | 85.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.5      | 6.8     | 16.6 | 15.2 | 11.6 | 11.1    | 61.3  | 14.3 | 3.6  | 3.9  | 0.9     | 22.7  | 14.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0068          | 0.0164          | 0.0451          | 0.1349          | 0.2457          | 0.5860          | 0.7001          | 0.8365          | 1.3464          |

Fineness Modulus

1.11



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505612

Sample Number: L0912917-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 33.43                       | 0.00         | #4                 | 521.08                  | 520.81               | 99.2          | 0.8              |
|                             |              | #10                | 482.70                  | 482.11               | 97.4          | 2.6              |
|                             |              | #20                | 414.45                  | 411.09               | 87.4          | 12.6             |
|                             |              | #40                | 382.68                  | 377.86               | 73.0          | 27.0             |
|                             |              | #60                | 374.12                  | 369.84               | 60.2          | 39.8             |
|                             |              | #140               | 352.70                  | 347.17               | 43.6          | 56.4             |
|                             |              | #200               | 348.01                  | 346.51               | 39.1          | 60.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 39.1

Weight of hydrometer sample = 33.43

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0350         | 21.4          | 78.6             |
| 5.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0224         | 19.5          | 80.5             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 15.7          | 84.3             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 15.7          | 84.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 15.7          | 84.3             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 13.9          | 86.1             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 13.9          | 86.1             |

## Fractional Components

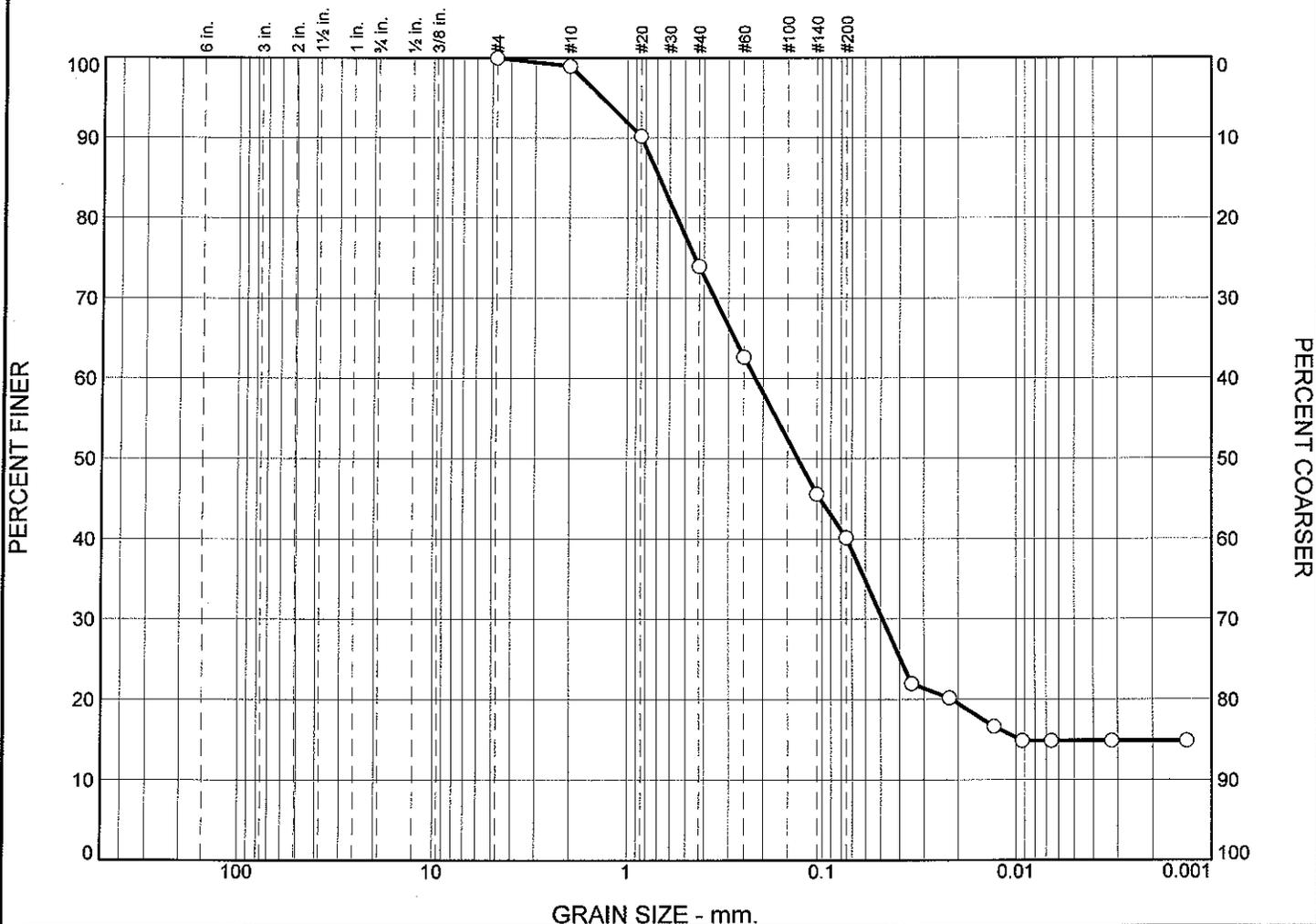
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.4      | 8.1     | 13.0 | 16.1 | 13.4 | 11.9    | 62.5  | 14.0 | 4.0  | 1.2  | 1.4     | 20.6  | 14.3 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0050          | 0.0252          | 0.0507          | 0.1476          | 0.2480          | 0.5962          | 0.7582          | 1.0627          | 1.6266          |

Fineness Modulus

1.17

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       |                 | % Granules      | % Sand          |                 |                 |                |                | % Silt |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|------|---------|--------|--|
|   |            |           |                 |                 |                 | V. Crs.         | Crs.            | Med.            | Fine           | V. Fine        | Crs.   | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 |                 | 0.8             | 7.1             | 14.1            | 15.1            | 13.8           | 13.1           | 14.3   | 3.7  | 3.0  | 0.0     | 14.8   |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |      |      |         |        |  |
| ○ |            |           | 0.6801          | 0.2187          | 0.1324          | 0.0488          | 0.0096          |                 |                |                |        |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505613    <b>Sample Number:</b> L0912917-11</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912917  
 Location: 505613  
 Sample Number: L0912917-11  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 36.32                       | 0.00         | #4                 | 521.78                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.17                  | 484.81               | 99.0          | 1.0              |
|                             |              | #20                | 408.60                  | 405.42               | 90.2          | 9.8              |
|                             |              | #40                | 367.18                  | 361.28               | 74.0          | 26.0             |
|                             |              | #60                | 370.27                  | 366.16               | 62.7          | 37.3             |
|                             |              | #140               | 349.03                  | 342.82               | 45.6          | 54.4             |
|                             |              | #200               | 347.23                  | 345.25               | 40.1          | 59.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 40.1  
 Weight of hydrometer sample = 36.32  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0 | 13.9       | 0.0347         | 21.9          | 78.1             |
| 5.00                | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0 | 14.2       | 0.0222         | 20.2          | 79.8             |
| 15.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0130         | 16.6          | 83.4             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 14.8          | 85.2             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 14.8          | 85.2             |
| 250.00              | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0032         | 14.8          | 85.2             |
| 1440.00             | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0013         | 14.8          | 85.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 7.1     | 14.1 | 15.1 | 13.8 | 13.1    | 63.2  | 14.3 | 3.7  | 3.0  | 0.0     | 21.0  | 14.8 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0096          | 0.0216          | 0.0488          | 0.1324          | 0.2187          | 0.5494          | 0.6801          | 0.8419          | 1.3554          |

Fineness Modulus

1.06

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505626

Sample Number: L0912917-12

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 79.11                       | 0.00         | #4                 | 521.42                  | 520.81               | 99.2          | 0.8              |
|                             |              | #10                | 486.78                  | 482.11               | 93.3          | 6.7              |
|                             |              | #20                | 423.67                  | 411.09               | 77.4          | 22.6             |
|                             |              | #40                | 388.02                  | 377.86               | 64.6          | 35.4             |
|                             |              | #60                | 377.87                  | 369.84               | 54.4          | 45.6             |
|                             |              | #140               | 356.91                  | 347.17               | 42.1          | 57.9             |
|                             |              | #200               | 349.70                  | 346.51               | 38.1          | 61.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 38.1

Weight of hydrometer sample = 79.11

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0180         | 1.0184            | 0.0132 | 15.0 | 12.3       | 0.0327         | 14.2          | 85.8             |
| 5.00                | 23.0            | 1.0150         | 1.0154            | 0.0132 | 12.0 | 13.1       | 0.0213         | 11.9          | 88.1             |
| 15.00               | 23.0            | 1.0120         | 1.0124            | 0.0132 | 9.0  | 13.9       | 0.0127         | 9.6           | 90.4             |
| 30.00               | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0  | 14.4       | 0.0091         | 8.0           | 92.0             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 7.2           | 92.8             |
| 250.00              | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0032         | 7.2           | 92.8             |
| 1440.00             | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0013         | 7.2           | 92.8             |

## Fractional Components

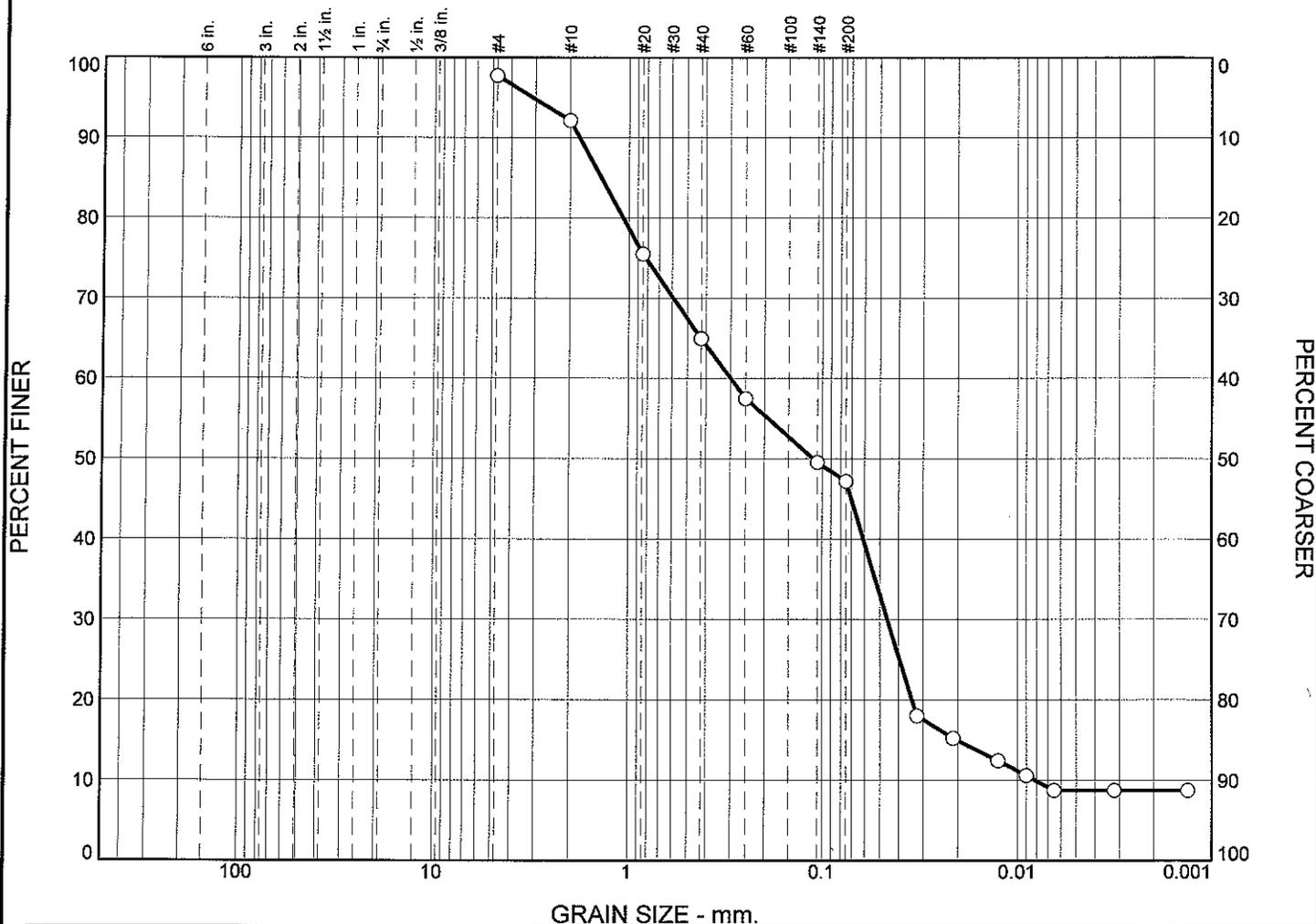
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.8      | 12.9    | 12.8 | 13.2 | 9.9  | 11.7    | 60.5  | 18.9 | 3.4  | 2.8  | 0.5     | 25.6  | 7.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0140          | 0.0336          | 0.0400          | 0.0566          | 0.1836          | 0.3345          | 0.9764          | 1.2778          | 1.6723          | 2.5561          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.47             | 23.95          | 0.69           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % | Pebbles         | % | Granules        | % Sand  |                 |      |                 |         | % Silt          |      |                 |         | % Clay         |  |                |
|---|----------|---|---------|---|-----------------|---|-----------------|---------|-----------------|------|-----------------|---------|-----------------|------|-----------------|---------|----------------|--|----------------|
|   |          |   |         |   |                 |   |                 | V. Crs. | Crs.            | Med. | Fine            | V. Fine | Crs.            | Med. | Fine            | V. Fine |                |  |                |
| ○ |          |   |         |   |                 |   | 4.4             | 13.5    | 11.3            | 9.9  | 6.4             | 10.2    | 23.2            | 4.1  | 3.9             | 1.0     | 8.7            |  |                |
| × | LL       |   | PL      |   | D <sub>85</sub> |   | D <sub>60</sub> |         | D <sub>50</sub> |      | D <sub>30</sub> |         | D <sub>15</sub> |      | D <sub>10</sub> |         | C <sub>c</sub> |  | C <sub>u</sub> |
| ○ |          |   |         |   | 1.3843          |   | 0.2993          |         | 0.1116          |      | 0.0457          |         | 0.0202          |      | 0.0082          |         | 0.85           |  | 36.62          |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505626    <b>Sample Number:</b> WG383975-1</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912917  
 Location: 505626  
 Sample Number: WG383975-1  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 81.47                       | 0.00         | #4                 | 523.61                  | 521.77               | 97.7          | 2.3              |
|                             |              | #10                | 489.36                  | 484.81               | 92.2          | 7.8              |
|                             |              | #20                | 418.98                  | 405.42               | 75.5          | 24.5             |
|                             |              | #40                | 369.88                  | 361.28               | 65.0          | 35.0             |
|                             |              | #60                | 372.27                  | 366.16               | 57.5          | 42.5             |
|                             |              | #140               | 349.28                  | 342.82               | 49.5          | 50.5             |
|                             |              | #200               | 347.17                  | 345.25               | 47.2          | 52.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 47.2

Weight of hydrometer sample = 81.47

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0190         | 1.0194            | 0.0132 | 16.0 | 12.1       | 0.0323         | 18.0          | 82.0             |
| 5.00                | 23.0            | 1.0160         | 1.0164            | 0.0132 | 13.0 | 12.9       | 0.0211         | 15.2          | 84.8             |
| 15.00               | 23.0            | 1.0130         | 1.0134            | 0.0132 | 10.0 | 13.6       | 0.0125         | 12.4          | 87.6             |
| 30.00               | 23.0            | 1.0110         | 1.0114            | 0.0132 | 8.0  | 14.2       | 0.0090         | 10.6          | 89.4             |
| 60.00               | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0065         | 8.7           | 91.3             |
| 250.00              | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0032         | 8.7           | 91.3             |
| 1440.00             | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0  | 14.7       | 0.0013         | 8.7           | 91.3             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 4.4      | 13.5    | 11.3 | 9.9  | 6.4  | 10.2    | 51.3  | 23.2 | 4.1  | 3.9  | 1.0     | 32.2 | 8.7   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0082          | 0.0202          | 0.0342          | 0.0457          | 0.1116          | 0.2993          | 1.0706          | 1.3843          | 1.7901          | 3.1066          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.44             | 36.62          | 0.85           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505711

Sample Number: L0912917-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.70                       | 0.00         | #4                 | 523.14                  | 520.81               | 96.6          | 3.4              |
|                             |              | #10                | 483.80                  | 482.11               | 94.1          | 5.9              |
|                             |              | #20                | 413.08                  | 411.09               | 91.3          | 8.7              |
|                             |              | #40                | 383.14                  | 377.09               | 82.4          | 17.6             |
|                             |              | #60                | 382.59                  | 369.84               | 63.9          | 36.1             |
|                             |              | #140               | 369.00                  | 347.17               | 32.1          | 67.9             |
|                             |              | #200               | 351.40                  | 346.51               | 25.0          | 75.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 25.0

Weight of hydrometer sample = 68.70

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0353         | 6.1           | 93.9             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 5.5           | 94.5             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 4.9           | 95.1             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 4.9           | 95.1             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 4.3           | 95.7             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 4.3           | 95.7             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 4.3           | 95.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.0      | 2.3     | 7.3  | 20.6 | 25.7 | 17.8    | 73.7  | 14.5 | 0.8  | 0.5  | 0.3     | 16.1  | 4.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0413          | 0.0504          | 0.0615          | 0.0957          | 0.1718          | 0.2251          | 0.3963          | 0.5197          | 0.7702          | 2.6982          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.14             | 5.45           | 0.98           |

Alpha Analytical



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912917  
**Location:** 505712  
**Sample Number:** L0912917-14  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.83                       | 0.00         | #4                 | 522.05                  | 521.77               | 99.6          | 0.4              |
|                             |              | #10                | 485.03                  | 484.81               | 99.3          | 0.7              |
|                             |              | #20                | 408.07                  | 405.42               | 95.4          | 4.6              |
|                             |              | #40                | 368.24                  | 361.28               | 85.3          | 14.7             |
|                             |              | #60                | 377.73                  | 366.16               | 68.5          | 31.5             |
|                             |              | #140               | 364.88                  | 342.82               | 36.5          | 63.5             |
|                             |              | #200               | 351.02                  | 345.25               | 28.1          | 71.9             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 28.1  
 Weight of hydrometer sample = 68.83  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0353         | 6.8           | 93.2             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 6.1           | 93.9             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 5.5           | 94.5             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 5.5           | 94.5             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 4.8           | 95.2             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 4.8           | 95.2             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 4.8           | 95.2             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 3.1     | 8.5  | 19.2 | 25.9 | 19.7    | 76.4  | 16.3 | 0.9  | 0.6  | 0.3     | 18.1  | 4.8  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0396 | 0.0472 | 0.0564 | 0.0812 | 0.1523 | 0.1991 | 0.3594 | 0.4208 | 0.5861 | 0.8257 |

| Fineness Modulus | Cu   | Cc   |
|------------------|------|------|
| 0.90             | 5.03 | 0.84 |



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912917  
 Location: 505713  
 Sample Number: L0912917-15  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.50                       | 0.00         | #4                 | 521.82                  | 520.81               | 98.5          | 1.5              |
|                             |              | #10                | 483.57                  | 482.11               | 96.4          | 3.6              |
|                             |              | #20                | 412.99                  | 411.09               | 93.6          | 6.4              |
|                             |              | #40                | 382.85                  | 377.86               | 86.3          | 13.7             |
|                             |              | #60                | 382.87                  | 369.84               | 67.3          | 32.7             |
|                             |              | #140               | 369.18                  | 347.17               | 35.2          | 64.8             |
|                             |              | #200               | 352.29                  | 346.51               | 26.7          | 73.3             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 26.7  
 Weight of hydrometer sample = 68.50  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0353         | 6.5           | 93.5             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 5.9           | 94.1             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 5.2           | 94.8             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 5.2           | 94.8             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 4.6           | 95.4             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 4.6           | 95.4             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 4.6           | 95.4             |

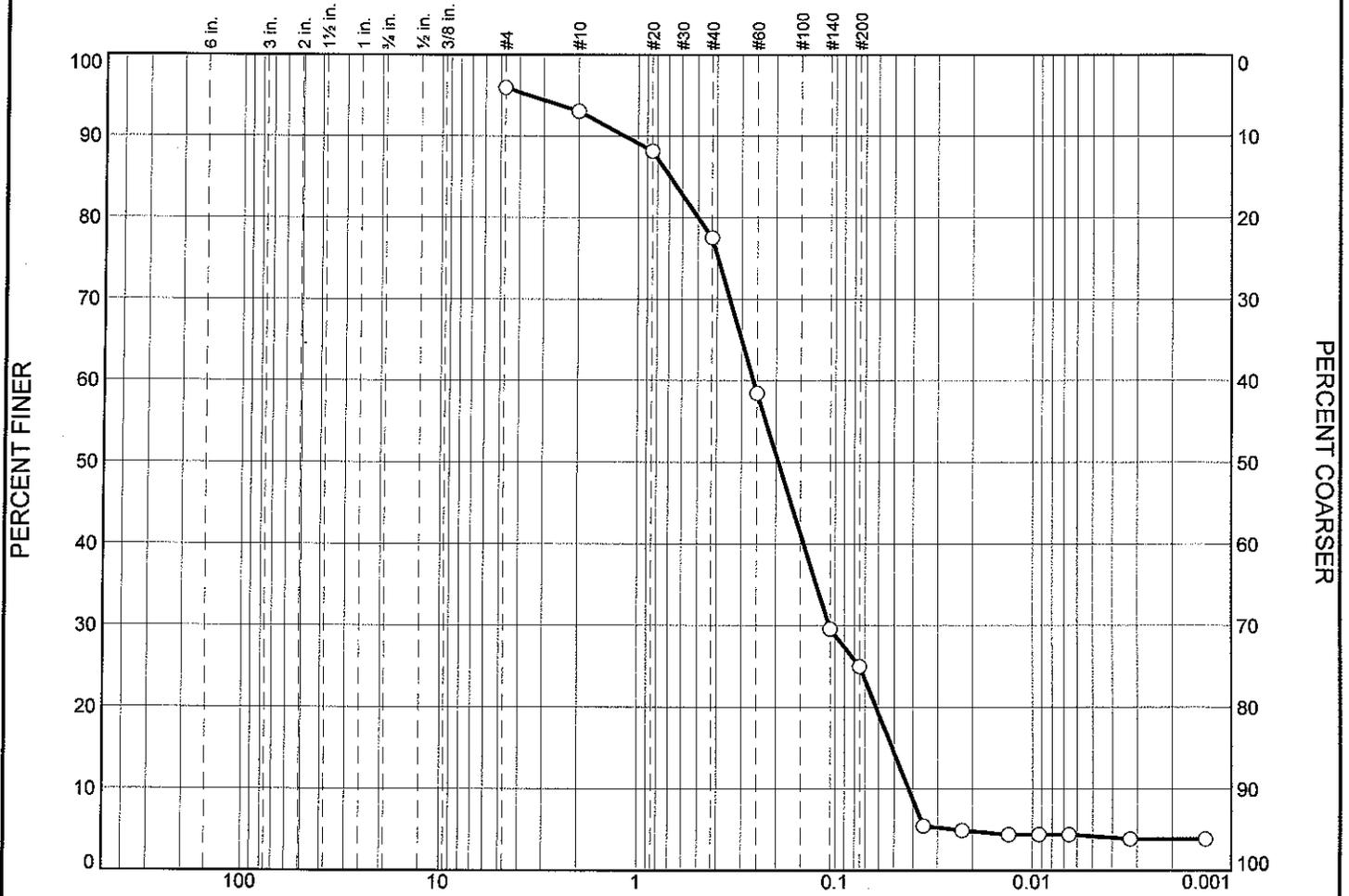
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.7      | 2.3     | 6.1  | 20.7 | 25.9 | 19.6    | 74.6  | 15.5 | 0.9  | 0.5  | 0.3     | 17.2  | 4.6  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0.0403 | 0.0485 | 0.0584 | 0.0857 | 0.1575 | 0.2056 | 0.3561 | 0.4095 | 0.6023 | 1.3009 |

| Fineness Modulus | Cu   | Cc   |
|------------------|------|------|
| 0.98             | 5.11 | 0.89 |

# Particle Size Distribution Report



**GRAIN SIZE - mm.**

| %                                   | Boulders  | %         | Cobbles    | %          | Pebbles    | %          | Granules   | % Sand     |           |           |      |         | % Silt |      |      |         | % Clay |     |
|-------------------------------------|-----------|-----------|------------|------------|------------|------------|------------|------------|-----------|-----------|------|---------|--------|------|------|---------|--------|-----|
|                                     |           |           |            |            |            |            |            | V. Crs.    | Crs.      | Med.      | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |     |
| <input type="radio"/>               |           |           |            |            |            |            | 2.3        | 4.0        | 9.1       | 21.6      | 23.3 | 14.9    | 14.9   | 0.7  | 0.2  | 0.4     |        | 4.0 |
| <input checked="" type="checkbox"/> | <b>LL</b> | <b>PL</b> | <b>D85</b> | <b>D60</b> | <b>D50</b> | <b>D30</b> | <b>D15</b> | <b>D10</b> | <b>Cc</b> | <b>Cu</b> |      |         |        |      |      |         |        |     |
| <input type="radio"/>               |           |           | 0.6915     | 0.2611     | 0.1945     | 0.1074     | 0.0511     | 0.0421     | 1.05      | 6.19      |      |         |        |      |      |         |        |     |

| <b>Material Description</b> | <b>USCS</b> | <b>AASHTO</b> |
|-----------------------------|-------------|---------------|
| <input type="radio"/>       |             |               |

|  |   |
|--|---|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 505726    <b>Sample Number:</b> L0912917-16</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p><br><br><br><br><br><br><br><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
|--|---|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505726

Sample Number: L0912917-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 76.49                       | 0.00         | #4                 | 524.87                  | 521.77               | 95.9          | 4.1              |
|                             |              | #10                | 487.02                  | 484.81               | 93.1          | 6.9              |
|                             |              | #20                | 409.16                  | 405.42               | 88.2          | 11.8             |
|                             |              | #40                | 369.42                  | 361.28               | 77.5          | 22.5             |
|                             |              | #60                | 380.76                  | 366.16               | 58.4          | 41.6             |
|                             |              | #140               | 364.90                  | 342.82               | 29.6          | 70.4             |
|                             |              | #200               | 348.78                  | 345.25               | 25.0          | 75.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 25.0

Weight of hydrometer sample = 76.49

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0353         | 5.4           | 94.6             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 4.9           | 95.1             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 4.4           | 95.6             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 4.4           | 95.6             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 4.4           | 95.6             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 3.9           | 96.1             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 3.9           | 96.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.3      | 4.0     | 9.1  | 21.6 | 23.3 | 14.9    | 72.9  | 14.9 | 0.7  | 0.2  | 0.4     | 16.2  | 4.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0421          | 0.0511          | 0.0620          | 0.1074          | 0.1945          | 0.2611          | 0.4993          | 0.6915          | 1.1712          | 3.5772          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.31             | 6.19           | 1.05           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505811

Sample Number: L0912917-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 120.57                      | 0.00         | #4                 | 524.87                  | 520.81               | 96.6          | 3.4              |
|                             |              | #10                | 487.02                  | 482.11               | 92.6          | 7.4              |
|                             |              | #20                | 419.79                  | 411.09               | 85.3          | 14.7             |
|                             |              | #40                | 412.61                  | 377.86               | 56.5          | 43.5             |
|                             |              | #60                | 400.67                  | 369.84               | 31.0          | 69.0             |
|                             |              | #140               | 348.00                  | 347.17               | 30.3          | 69.7             |
|                             |              | #200               | 375.78                  | 346.51               | 6.0           | 94.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 6.0

Weight of hydrometer sample = 120.57

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0100         | 1.0104            | 0.0132 | 7.0 | 14.4       | 0.0353         | 0.8           | 99.2             |
| 5.00                | 23.0            | 1.0090         | 1.0094            | 0.0132 | 6.0 | 14.7       | 0.0226         | 0.7           | 99.3             |
| 15.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0131         | 0.7           | 99.3             |
| 30.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0093         | 0.7           | 99.3             |
| 60.00               | 23.0            | 1.0080         | 1.0084            | 0.0132 | 5.0 | 15.0       | 0.0066         | 0.7           | 99.3             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 0.6           | 99.4             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 0.6           | 99.4             |

## Fractional Components

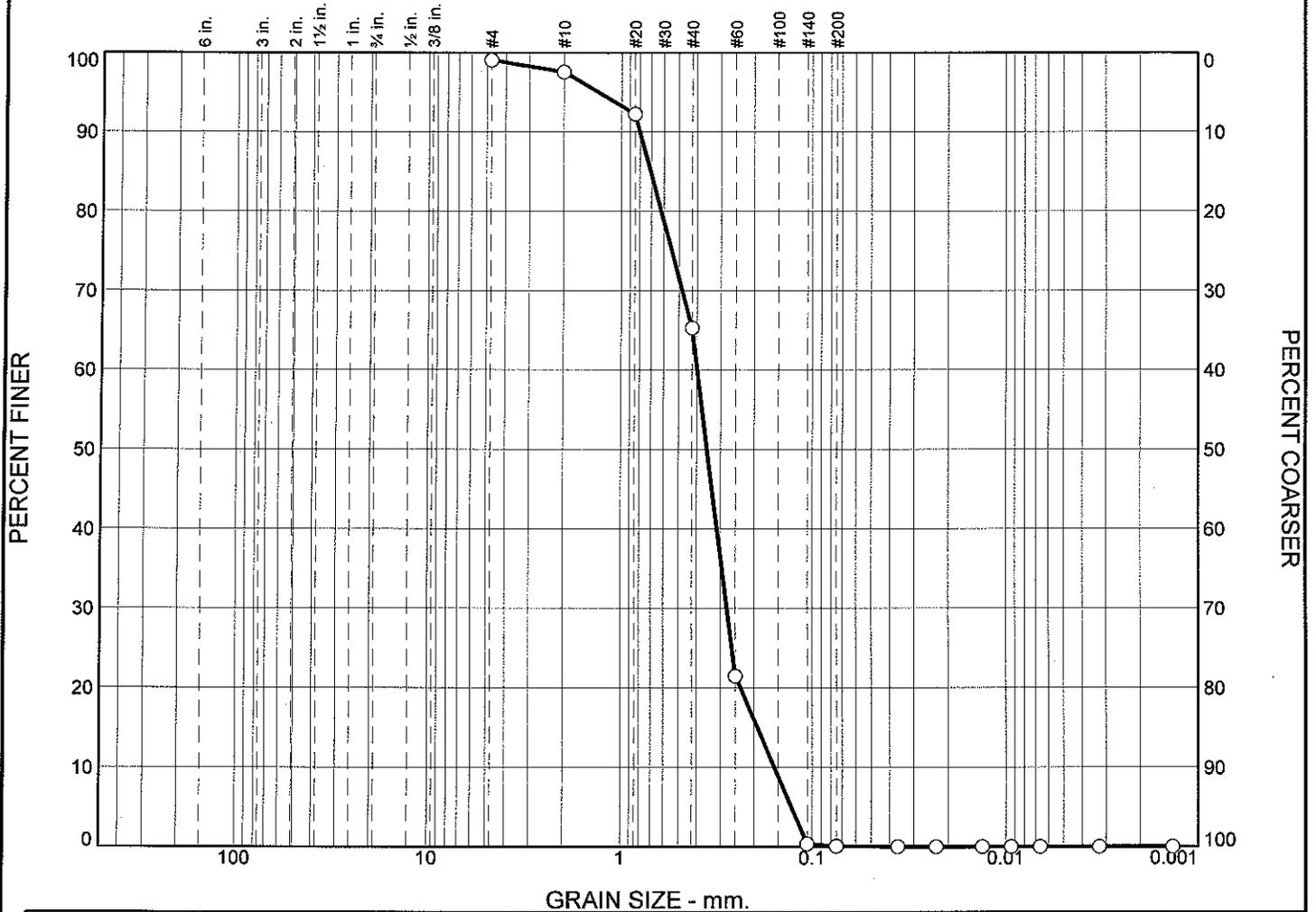
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.2      | 5.9     | 23.4 | 32.3 | 0.6  | 25.7    | 87.9  | 3.9  | 0.1  | 0.0  | 0.1     | 4.1   | 0.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0794          | 0.0853          | 0.0916          | 0.1056          | 0.3712          | 0.4621          | 0.7475          | 0.8430          | 1.4763          | 3.3580          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.81             | 5.82           | 0.30           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 1.2        | 4.3     | 21.7   | 50.1   | 17.1   | 4.3     | 0.1    | 0.0  | 0.0  | 0.0     | 0.0    |
| ✕ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.7055    | 0.3987     | 0.3532  | 0.2773 | 0.1922 | 0.1568 | 1.23    | 2.54   |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912917    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 515812    <b>Sample Number:</b> L0912917-18</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912917  
 Location: 515812  
 Sample Number: L0912917-18  
 USCS Classification: SP  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 121.27                      | 0.00         | #4                 | 522.91                  | 521.77               | 99.1          | 0.9              |
|                             |              | #10                | 486.62                  | 484.81               | 97.6          | 2.4              |
|                             |              | #20                | 411.86                  | 405.42               | 92.3          | 7.7              |
|                             |              | #40                | 394.01                  | 361.28               | 65.3          | 34.7             |
|                             |              | #60                | 419.29                  | 366.16               | 21.5          | 78.5             |
|                             |              | #140               | 368.37                  | 342.82               | 0.4           | 99.6             |
|                             |              | #200               | 345.62                  | 345.25               | 0.1           | 99.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 0.1  
 Weight of hydrometer sample = 121.27  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0363         | 0.0           | 100.0            |
| 5.00                | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0230         | 0.0           | 100.0            |
| 15.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0133         | 0.0           | 100.0            |
| 30.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0094         | 0.0           | 100.0            |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 0.0           | 100.0            |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 0.0           | 100.0            |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 0.0           | 100.0            |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.2      | 4.3     | 21.7 | 50.1 | 17.1 | 4.3     | 97.5  | 0.1  | 0.0  | 0.0  | 0.0     | 0.1   | 0.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1568          | 0.1922          | 0.2356          | 0.2773          | 0.3532          | 0.3987          | 0.6205          | 0.7055          | 0.8021          | 1.3224          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.85             | 2.54           | 1.23           |

Alpha Analytical



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912917  
**Location:** 505813  
**Sample Number:** L0912917-19  
**USCS Classification:** SP  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 119.84                      | 0.00         | #4                 | 524.28                  | 520.81               | 97.1          | 2.9              |
|                             |              | #10                | 483.51                  | 482.11               | 95.9          | 4.1              |
|                             |              | #20                | 416.98                  | 411.09               | 91.0          | 9.0              |
|                             |              | #40                | 412.63                  | 377.86               | 62.0          | 38.0             |
|                             |              | #60                | 422.63                  | 369.84               | 18.0          | 82.0             |
|                             |              | #140               | 368.10                  | 347.17               | 0.5           | 99.5             |
|                             |              | #200               | 346.86                  | 346.51               | 0.2           | 99.8             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 0.2  
 Weight of hydrometer sample = 119.84  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0363         | 0.0           | 100.0            |
| 5.00                | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0230         | 0.0           | 100.0            |
| 15.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0133         | 0.0           | 100.0            |
| 30.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0094         | 0.0           | 100.0            |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 0.0           | 100.0            |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 0.0           | 100.0            |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 0.0           | 100.0            |

**Fractional Components**

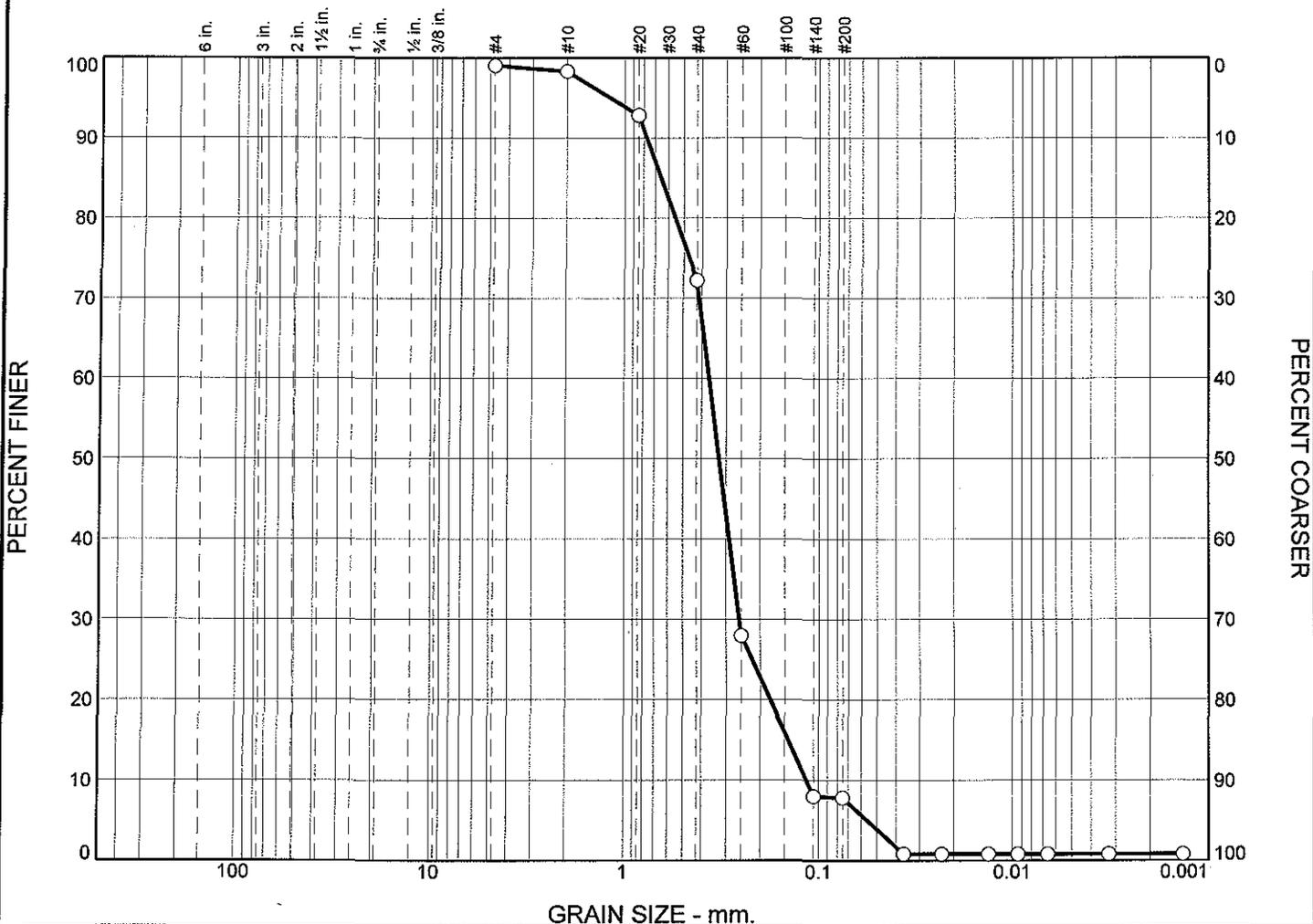
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.0      | 3.9     | 23.2 | 50.8 | 14.2 | 3.6     | 95.7  | 0.2  | 0.0  | 0.0  | 0.0     | 0.2   | 0.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1691          | 0.2162          | 0.2562          | 0.2890          | 0.3678          | 0.4148          | 0.6532          | 0.7361          | 0.8295          | 1.6992          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.97             | 2.45           | 1.19           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        |
| ○ |            |           |                 | 0.6             | 4.4             | 16.8            | 49.1            | 16.2            | 5.8            | 5.2            | 0.0  | 0.0  | 0.8    |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |
| ○ |            |           | 0.6531          | 0.3671          | 0.3256          | 0.2562          | 0.1432          | 0.1156          | 1.55           | 3.18           |      |      |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912917 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 505826 <b>Sample Number:</b> L0912917-20 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912917

Location: 505826

Sample Number: L0912917-20

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 113.65                      | 0.00         | #4                 | 522.84                  | 521.77               | 99.1          | 0.9              |
|                             |              | #10                | 485.66                  | 484.81               | 98.3          | 1.7              |
|                             |              | #20                | 411.64                  | 405.42               | 92.8          | 7.2              |
|                             |              | #40                | 384.71                  | 361.28               | 72.2          | 27.8             |
|                             |              | #60                | 416.45                  | 366.16               | 28.0          | 72.0             |
|                             |              | #140               | 365.53                  | 342.82               | 8.0           | 92.0             |
|                             |              | #200               | 345.47                  | 345.25               | 7.8           | 92.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 7.8

Weight of hydrometer sample = 113.65

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0363         | 0.8           | 99.2             |
| 5.00                | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0230         | 0.8           | 99.2             |
| 15.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0133         | 0.8           | 99.2             |
| 30.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0094         | 0.8           | 99.2             |
| 60.00               | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0066         | 0.8           | 99.2             |
| 250.00              | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0032         | 0.8           | 99.2             |
| 1440.00             | 23.0            | 1.0070         | 1.0074            | 0.0132 | 4.0 | 15.2       | 0.0014         | 0.8           | 99.2             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.6      | 4.4     | 16.8 | 49.1 | 16.2 | 5.8     | 92.3  | 5.2  | 0.0  | 0.0  |         | 5.2   | 0.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1156          | 0.1432          | 0.1775          | 0.2562          | 0.3256          | 0.3671          | 0.5520          | 0.6531          | 0.7727          | 1.1919          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.66             | 3.18           | 1.55           |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. *NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. *NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. *NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A,3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D,9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

Station 249

# CHAIN OF CUSTODY

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015:46  
02

Westborough, MA    Mansfield, MA  
TEL: 508-898-9220    TEL: 508-822-9300  
FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 60912917

**Report Information Data Deliverables Billing Information**  
 FAX     EMAIL     Same as Client info    PO #:  
 ADEX     Add'l Deliverables

**Regulatory Requirements/Report Limits**  
 State/Fed Program    Criteria  
 fed

## ANALYSIS

| total PCB congeners NOAA 18 | TOC                                 | grain size                          | archive                  |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | Sample Specific Comments | TOTAL # BOTTLES |
|-----------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|--------------------------|-----------------|
|                             |                                     |                                     |                          |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                          |                 |
|                             |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs                   | 1               |
|                             |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs                   | 1               |
|                             |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs                   | 1               |
|                             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed chem                 | 1               |
|                             |                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed gs                   | 1               |
|                             |                                     | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>   | sed arch                 | 1               |
|                             |                                     |                                     |                          |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                          |                 |
|                             |                                     |                                     |                          |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                          |                 |
|                             |                                     |                                     |                          |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                          |                 |
|                             |                                     |                                     |                          |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                          |                 |
|                             |                                     |                                     |                          |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |                          |                 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|  |   |        |         |       |    |    |
|--|---|--------|---------|-------|----|----|
|  | 1 | 505411 | 9/25/09 | 17:48 | SE | HC |
|  | 2 | 505412 | 9/25/09 | 17:46 | SE | HC |
|  | 3 | 505413 | 9/25/09 | 17:48 | SE | HC |
|  | 4 | 505425 | 9/25/09 | 17:48 | SE | HC |
|  |   | 505426 | 9/25/09 | 17:48 | SE | HC |
|  |   | 505427 | 9/25/09 | 17:48 | SE | HC |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
|--------------------|---------------|--------------------|---------------|
| <i>[Signature]</i> | 9/25/09 19:05 | <i>[Signature]</i> | 9/25/09 19:07 |
| <i>[Signature]</i> | 9/28/09 09:13 | <i>[Signature]</i> | 9/28/09 9:25  |
| <i>[Signature]</i> | 9/28/09 10:20 | <i>[Signature]</i> | 9/28/09 10:22 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY

Station: LJO

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20912917



Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009  
 Project Location: New Bedford Harbor  
 Project #: TO-0018  
 Project Manager: Lee Weishar  
 ALPHA Quote #:

## Client Information

Client: Woods Hole Group  
 Address: 81 Technology Park Drive  
 E. Falmouth, MA 02536  
 Phone: 508-540-8080  
 Fax: 508-540-1001  
 Email: lweishar@whgrp.com  
 These samples have been Previously analyzed by Alpha

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)  
 Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: 20912917

| Report Information                       | Data Deliverables                           | Billing Information                                     |
|--|---|---|
| <input type="checkbox"/> FAX             | <input checked="" type="checkbox"/> EMAIL   | <input checked="" type="checkbox"/> Same as Client info |
| <input checked="" type="checkbox"/> ADEX | <input type="checkbox"/> Add'l Deliverables | PO #:   |

## Regulatory Requirements/Report Limits

State/Fed Program: fed Criteria:

| ANALYSIS                    |        |            |         |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |                          |
|-----------------------------|--------|------------|---------|----|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|--------------------------|
| total PCB congeners NOAA 18 | TOC    | grain size | archive |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |  |                 | Sample Specific Comments |
| 5                           | 505511 | 9-27-09    | 09:48   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
| 6                           | 505512 | 9-27-09    | 10:20   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
| 7                           | 505513 | 9-27-09    | 10:30   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | ben gs          | 1                        |
|                             | 505525 | 9-27-09    | 10:03   | SE | JB | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed chem        | 1                        |
| 8                           | 505526 | 9-27-09    | 10:03   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>   | sed gs          | 1                        |
|                             | 505527 | 9-27-09    | 10:03   | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>   | sed arch        | 1                        |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 5                              | 505511    | 9-27-09    | 09:48 | SE            | JB                 |
| 6                              | 505512    | 9-27-09    | 10:20 | SE            | JB                 |
| 7                              | 505513    | 9-27-09    | 10:30 | SE            | JB                 |
|                                | 505525    | 9-27-09    | 10:03 | SE            | JB                 |
| 8                              | 505526    | 9-27-09    | 10:03 | SE            | JB                 |
|                                | 505527    | 9-27-09    | 10:03 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                    |               |                     |               |
|--------------------|---------------|---------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:        | Date/Time     |
| <i>James Bajek</i> | 9/27/09 1605  | <i>P. Gilbert</i>   | 9/27/09       |
| <i>P. Gilbert</i>  | 9/28/09 09:13 | <i>P. Gilbert</i>   | 9/28/09 9:25  |
|                    | 9/28/09 10:20 | <i>M. [unclear]</i> | 9/28/09 10:20 |

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# CHAIN OF CUSTODY

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Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

Date Rec'd in Lab:

ALPHA Job #: 10912917

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO.#:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 505611    | 9-27-09    | 08:23 | SE            | JB                 |
| 10                             | 505612    | 9-27-09    | 08:42 | SE            | JB                 |
| 11                             | 505613    | 9-27-09    | 08:45 | SE            | JB                 |
|                                | 505625    | 9-27-09    | 08:36 | SE            | JB                 |
| 12                             | 505626    | 9-27-09    | 08:36 | SE            | JB                 |
|                                | 505627    | 9-27-09    | 08:36 | SE            | JB                 |
| 12                             | 505645    | 9-27-09    | 08:36 | SE            | JB                 |
|                                | 505646    | 9-27-09    | 08:36 | SE            | JB                 |

Container Type

G G G G - - - - -

Preservative

A A A A - - - - -

Relinquished By:

James Bajek  
 P. Gilbert

Date/Time

9/29/09 1605  
 9-28-09 09:13  
 9/28/09 10:20

Received By:

Nyck Hange  
 P. Gilbert  
 W. Hange

Date/Time

9-27-09  
 9/28/09 9:25  
 9/28/09 10:20

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# CHAIN OF CUSTODY

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Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: 10912917

**Report Information** **Data Deliverables** **Billing Information**

FAX  EMAIL  Same as Client info PO #:

ADEX  Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18 | TOC | grain size | archive |  |  |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING | TOTAL # BOTTLES   |   |
|-----------------------------|-----|------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|-----------------|---|---|
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 |   |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 | <input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs  | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs  | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs  | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed chem  | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed gs  | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed arch  | 1 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 13 | 505711 | 9/25/09 | 16:48 | SE | JB |
| 14 | 505712 | 9/25/09 | 17:15 | SE | JB |
| 15 | 505713 | 9/25/09 | 17:32 | SE | JB |
|    | 505725 | 9/25/09 | 17:00 | SE | JB |
| 16 | 505726 | 9/25/09 | 17:00 | SE | JB |
|    | 505727 | 9/25/09 | 17:00 | SE | JB |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:     | Date/Time     | Received By:         | Date/Time     |
|----------------------|---------------|----------------------|---------------|
| <i>James Baych</i>   | 9/25/09 18:55 | <i>Kalvin Lincum</i> | 9/25/09 19:07 |
| <i>Kalvin Lincum</i> | 9/28/09 09:13 | <i>P. Gilbert</i>    | 9/28/09 9:25  |
| <i>P. Gilbert</i>    | 9/28/09 10:20 | <i>James J.</i>      | 9/28/09 10:20 |

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Station 306

# CHAIN OF CUSTODY

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Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912917

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
Filtration  
 Done  
 Not Needed  
 Lab to do  
Preservation  
 Lab to do  
(Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 17                             | 505811    | 9/28/09    | 09:02 | SE            | JB                 |
| 18                             | 505812    | 9/28/09    | 09:11 | SE            | JB                 |
| 19                             | 505813    | 9/28/09    | 09:16 | SE            | JB                 |
|                                | 505825    | 9/28/09    | 09:08 | SE            | JB                 |
| 20                             | 505826    | 9/28/09    | 09:08 | SE            | JB                 |
|                                | 505827    | 9/28/09    | 09:08 | SE            | JB                 |

Container Type  
Preservative

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Relinquished By:

James Bajek

Date/Time

9/28/09 15:22

Received By:

[Signature]

Date/Time

9/29/09 15:22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912918  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912918-01                | 505911           | NEW BEDFORD, MA            | 09/26/09 14:37                  |
| L0912918-02                | 505912           | NEW BEDFORD, MA            | 09/26/09 15:03                  |
| L0912918-03                | 505913           | NEW BEDFORD, MA            | 09/26/09 15:08                  |
| L0912918-04                | 505926           | NEW BEDFORD, MA            | 09/26/09 14:50                  |
| L0912918-05                | 506011           | NEW BEDFORD, MA            | 09/28/09 10:00                  |
| L0912918-06                | 506012           | NEW BEDFORD, MA            | 09/28/09 10:17                  |
| L0912918-07                | 506013           | NEW BEDFORD, MA            | 09/28/09 10:25                  |
| L0912918-08                | 506026           | NEW BEDFORD, MA            | 09/28/09 10:10                  |
| L0912918-09                | 506111           | NEW BEDFORD, MA            | 09/26/09 16:46                  |
| L0912918-10                | 506112           | NEW BEDFORD, MA            | 09/26/09 17:07                  |
| L0912918-11                | 506113           | NEW BEDFORD, MA            | 09/26/09 17:21                  |
| L0912918-12                | 506126           | NEW BEDFORD, MA            | 09/26/09 16:58                  |
| L0912918-13                | 506211           | NEW BEDFORD, MA            | 09/28/09 08:05                  |
| L0912918-14                | 506212           | NEW BEDFORD, MA            | 09/28/09 08:16                  |
| L0912918-15                | 506213           | NEW BEDFORD, MA            | 09/28/09 08:20                  |
| L0912918-16                | 506226           | NEW BEDFORD, MA            | 09/28/09 08:10                  |
| L0912918-17                | 506311           | NEW BEDFORD, MA            | 09/26/09 15:51                  |
| L0912918-18                | 506312           | NEW BEDFORD, MA            | 09/26/09 16:12                  |
| L0912918-19                | 506313           | NEW BEDFORD, MA            | 09/26/09 16:17                  |
| L0912918-20                | 506326           | NEW BEDFORD, MA            | 09/26/09 16:03                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 26, 2009. The report was ammended to include revised Grain Size data.

The WG384169-1 Laboratory Duplicate RPD is outside the acceptance criteria for % fine sand (83%), silt (171%), clay (167%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

**Case Narrative (continued)**

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-01  
**Client ID:** 505911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 14:37  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 9.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 15.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 22.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 34.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-02  
**Client ID:** 505912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 15:03  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 20.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 39.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 10.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-03  
**Client ID:** 505913  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 15:08  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 37.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-04  
**Client ID:** 505926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 14:50  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 22.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-05  
**Client ID:** 506011  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 10:00  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 14.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 18.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-06  
**Client ID:** 506012  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 10:17  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 8.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 15.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 20.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-07  
**Client ID:** 506013  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 10:25  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 11.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 17.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 22.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 32.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-08  
**Client ID:** 506026  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 10:10  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 15.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 16.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 20.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-09  
**Client ID:** 506111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 16:46  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 36.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 32.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.300  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.100  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-10  
**Client ID:** 506112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 17:07  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 38.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 32.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.700  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.200  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-11  
**Client ID:** 506113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 17:21  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 13.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 38.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 7.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-12  
**Client ID:** 506126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 16:58  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 34.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 31.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.600  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-13  
**Client ID:** 506211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 08:05  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 45.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-14  
**Client ID:** 506212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 08:16  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 48.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 22.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-15  
**Client ID:** 506213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 08:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 38.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-16  
**Client ID:** 506226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/28/09 08:10  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 21.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 39.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 10.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-17  
**Client ID:** 506311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 15:51  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 20.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 43.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 20.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.200  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-18  
**Client ID:** 506312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 16:12  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 18.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 44.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 22.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 6.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.800  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.200  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-19  
**Client ID:** 506313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 16:17  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 17.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 45.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 22.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 6.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 1.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.300  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912918-20  
**Client ID:** 506326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 16:03  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 19.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 45.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 19.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 0.600  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 0.200  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912918

**Report Date:** 02/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG384169-1 QC Sample: L0912918-20 Client ID: 506326 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 2.3           | 2.50             | %     | 8   |      | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 3.6           | 3.80             | %     | 5   |      | 20         |
| Coarse Sand (0.50-1.00 mm)   | 19.0          | 21.0             | %     | 10  |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 45.2          | 45.8             | %     | 1   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 19.7          | 8.10             | %     | 83  | Q    | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 5.6           | 5.00             | %     | 11  |      | 20         |
| Silt - (1.95-62.5 um)  | 0.6           | 7.70             | %     | 171 | Q    | 20         |
| Clay - (<1.95 um)  | 0.2           | 2.20             | %     | 167 | Q    | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912918

Project Number: TO-0018

Report Date: 02/03/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

## Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| A      | Absent       |
| B      | Absent       |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912918-01A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-02A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-03A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-04A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-05A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-06A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-07A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-08A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912918

Report Date: 02/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912918-09A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-10A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-11A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-12A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-13A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-14A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-15A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-16A | Glass 250ml unpreserved | A      | N/A | 2.0        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-17A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-18A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912918

Report Date: 02/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912918-19A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912918-20A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCS D** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MS D** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912918  
**Report Date:** 02/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

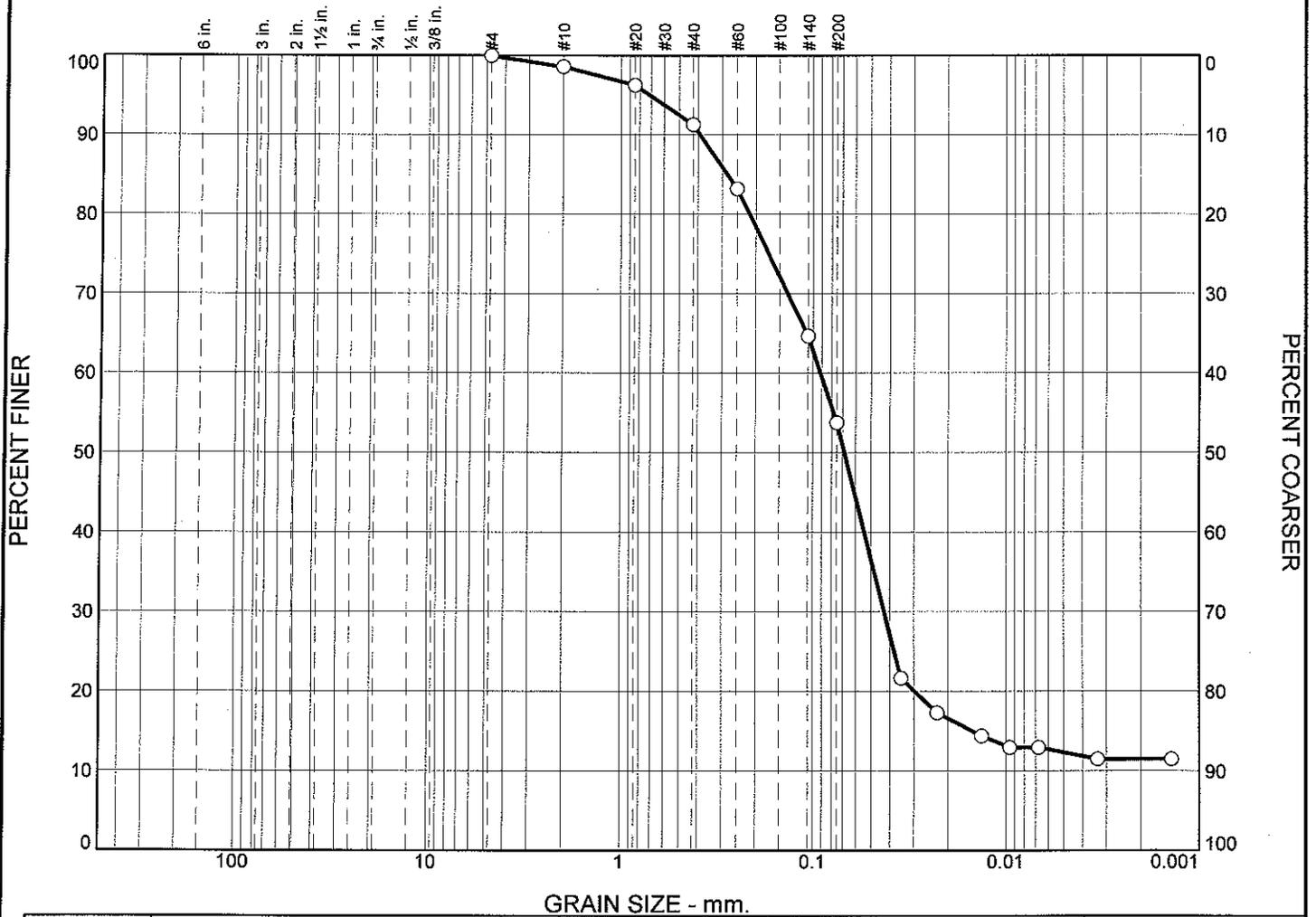
Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders           | % Cobbles | % Pebbles       |                 | % Granules      | % Sand          |                 |                 |                |                | % Silt |        |      |         | % Clay |
|---|----------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|--------|------|---------|--------|
|   |                      |           |                 |                 |                 | V. Crs.         | Crs.            | Med.            | Fine           | V. Fine        | Crs.   | Med.   | Fine | V. Fine |        |
| ○ |                      |           |                 |                 | 1.1             | 1.9             | 4.3             | 9.2             | 15.0           | 22.1           | 25.7   | 5.2    | 2.3  | 1.1     | 11.8   |
| ⊗ | LL                   | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |        |      |         |        |
| ○ |                      |           | 0.2816          | 0.0915          | 0.0686          | 0.0427          | 0.0150          |                 |                |                |        |        |      |         |        |
| ○ | Material Description |           |                 |                 |                 |                 |                 |                 |                |                | USCS   | AASHTO |      |         |        |

**Project No.** L0912918     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
**Source of Sample:** 505911     **Sample Number:** L0912918-01  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 505911

Sample Number: L0912918-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 59.60                       | 0.00         | #4                 | 521.81                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.63                  | 484.81               | 98.6          | 1.4              |
|                             |              | #20                | 406.79                  | 405.42               | 96.3          | 3.7              |
|                             |              | #40                | 364.25                  | 361.28               | 91.3          | 8.7              |
|                             |              | #60                | 370.98                  | 366.16               | 83.2          | 16.8             |
|                             |              | #140               | 353.86                  | 342.82               | 64.7          | 35.3             |
|                             |              | #200               | 351.77                  | 345.25               | 53.7          | 46.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 53.7

Weight of hydrometer sample = 59.60

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0150         | 1.0149            | 0.0136 | 12.0 | 13.1       | 0.0350         | 21.6          | 78.4             |
| 5.00                | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0  | 13.9       | 0.0228         | 17.3          | 82.7             |
| 15.00               | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0134         | 14.4          | 85.6             |
| 30.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0096         | 12.9          | 87.1             |
| 60.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0068         | 12.9          | 87.1             |
| 250.00              | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0033         | 11.5          | 88.5             |
| 1440.00             | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0014         | 11.5          | 88.5             |

## Fractional Components

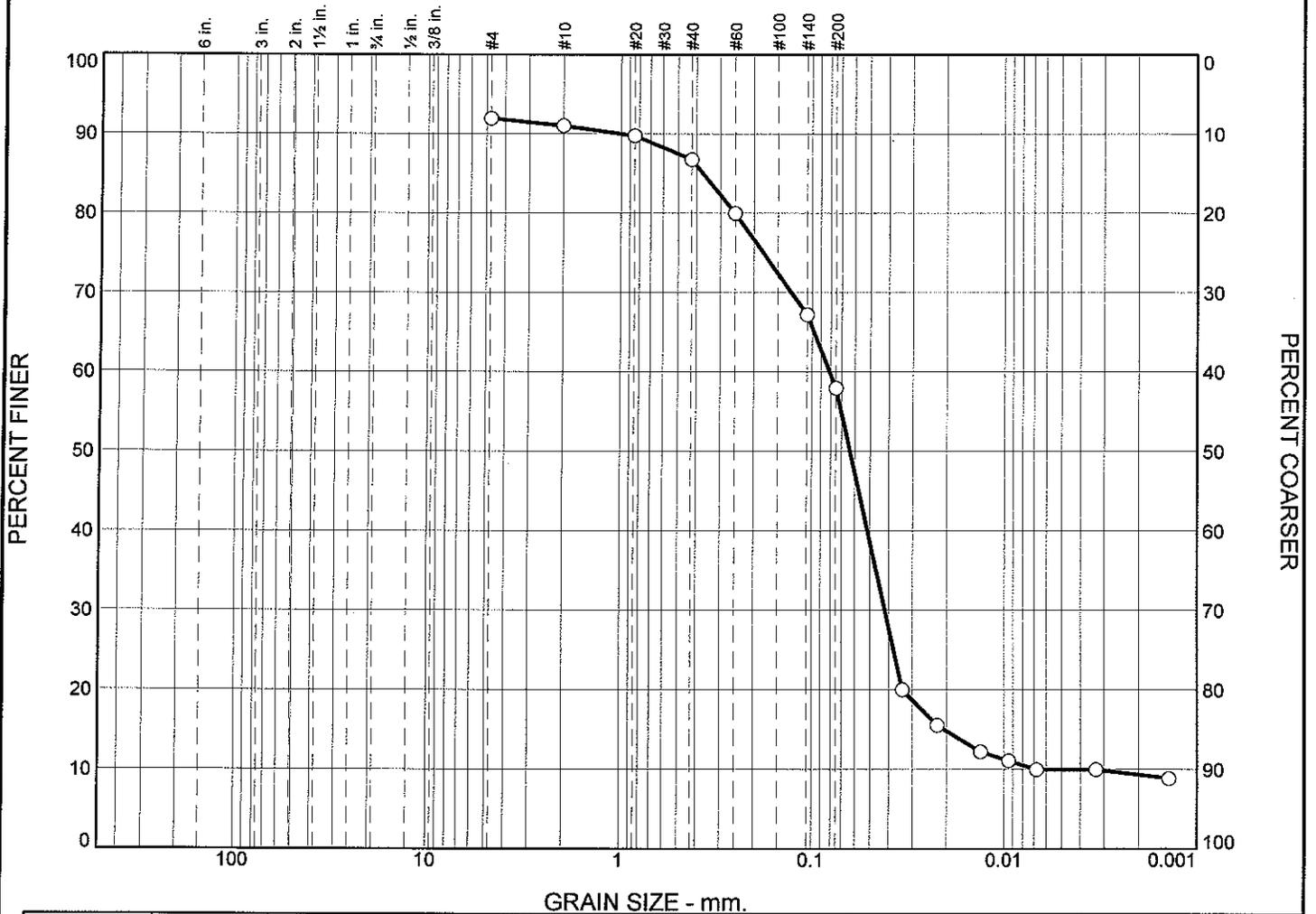
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.1      | 1.9     | 4.3  | 9.2  | 15.0 | 22.1    | 52.5  | 25.7 | 5.2  | 2.3  | 1.1     | 34.3  | 11.8 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0150          | 0.0298          | 0.0427          | 0.0686          | 0.0915          | 0.2157          | 0.2816          | 0.3909          | 0.7135          |

| Fineness Modulus |
|------------------|
| 0.52             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 0.7             | 1.0             | 2.5             | 7.5             | 10.3            | 20.5           | 30.2           | 5.8  | 2.8  | 0.4     | 10.0   |
| × | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.3705          | 0.0810          | 0.0635          | 0.0418          | 0.0206          | 0.0069          | 3.15           | 11.83          |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505912    <b>Sample Number:</b> L0912918-02</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 505912

Sample Number: L0912918-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 83.50                       | 0.00         | #4                 | 527.55                  | 520.81               | 91.9          | 8.1              |
|                             |              | #10                | 482.87                  | 482.11               | 91.0          | 9.0              |
|                             |              | #20                | 412.15                  | 411.09               | 89.7          | 10.3             |
|                             |              | #40                | 380.36                  | 377.86               | 86.8          | 13.2             |
|                             |              | #60                | 375.51                  | 369.84               | 80.0          | 20.0             |
|                             |              | #140               | 357.82                  | 347.17               | 67.2          | 32.8             |
|                             |              | #200               | 354.26                  | 346.51               | 57.9          | 42.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 57.9

Weight of hydrometer sample = 83.50

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0180         | 1.0179            | 0.0136 | 15.0 | 12.3       | 0.0339         | 20.0          | 80.0             |
| 5.00                | 20.0            | 1.0140         | 1.0139            | 0.0136 | 11.0 | 13.4       | 0.0223         | 15.5          | 84.5             |
| 15.00               | 20.0            | 1.0110         | 1.0109            | 0.0136 | 8.0  | 14.2       | 0.0133         | 12.2          | 87.8             |
| 30.00               | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0095         | 11.1          | 88.9             |
| 60.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0068         | 10.0          | 90.0             |
| 250.00              | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0033         | 10.0          | 90.0             |
| 1440.00             | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0014         | 8.8           | 91.2             |

## Fractional Components

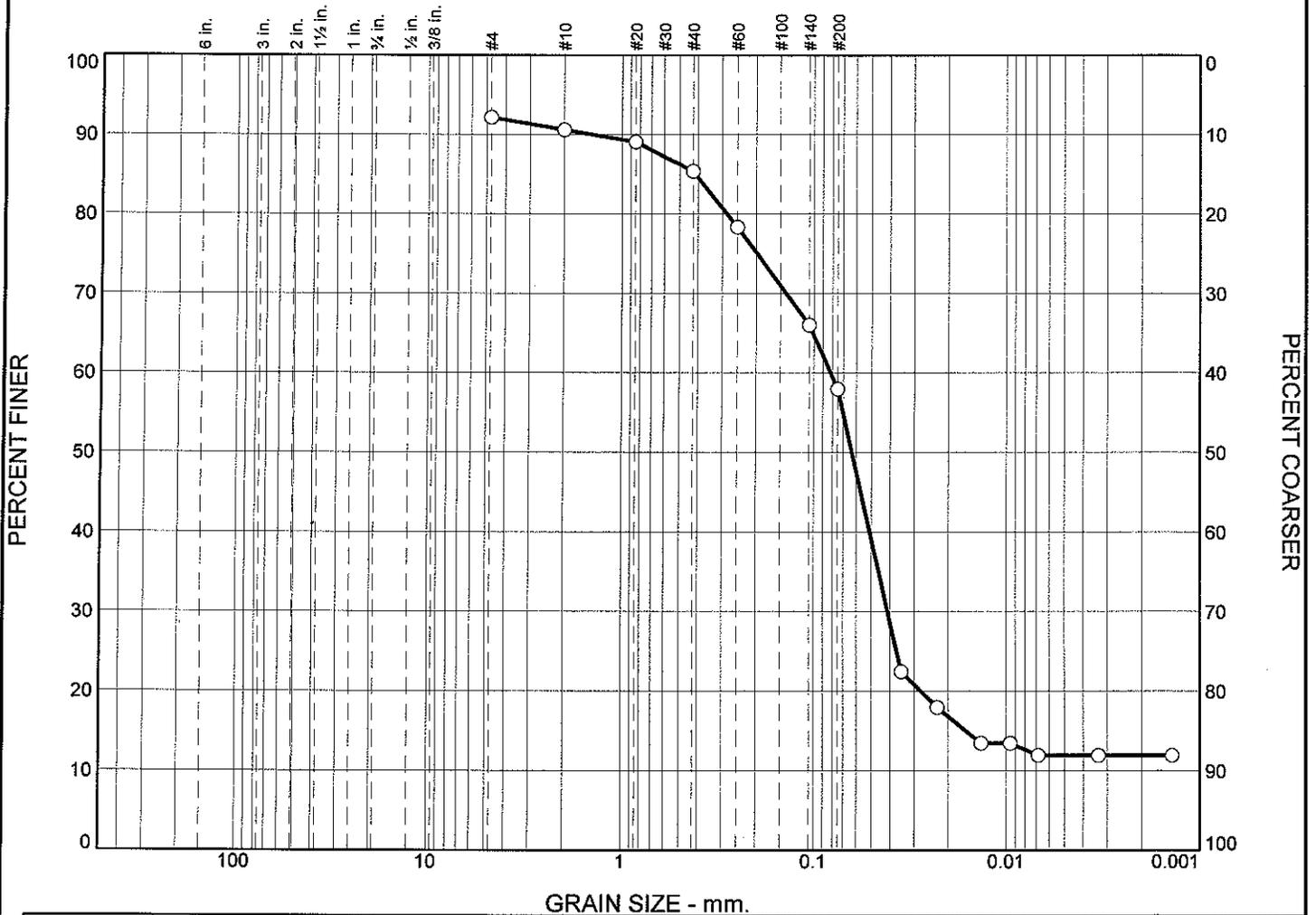
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.7      | 1.0     | 2.5  | 7.5  | 10.3 | 20.5    | 41.8  | 30.2 | 5.8  | 2.8  | 0.4     | 39.2  | 10.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0069          | 0.0206          | 0.0339          | 0.0418          | 0.0635          | 0.0810          | 0.2507          | 0.3705          | 1.0070          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.84             | 11.83          | 3.15           |

Alpha Analytical

# Particle Size Distribution Report



|                                     |  | GRAIN SIZE - mm. |           |           |            |         |        |        |      |         |        |      |      |         |        |
|-------------------------------------|--|------------------|-----------|-----------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
|                                     |  | % Boulders       | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|                                     |  |                  |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |  |                  |           |           | 1.2        | 1.3     | 3.1    | 7.9    | 9.9  | 18.9    | 28.3   | 6.5  | 2.2  | 0.6     | 11.9   |
| <input checked="" type="checkbox"/> |  | LL               | PL        | D85       | D60        | D50     | D30    | D15    | D10  | Cc      | Cu     |      |      |         |        |
| <input type="radio"/>               |  |                  |           | 0.4135    | 0.0819     | 0.0632  | 0.0411 | 0.0162 |      |         |        |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 505913    <b>Sample Number:</b> L0912918-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 505913

Sample Number: L0912918-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 61.96                       | 0.00         | #4                 | 526.64                  | 521.77               | 92.1          | 7.9              |
|                             |              | #10                | 485.77                  | 484.81               | 90.6          | 9.4              |
|                             |              | #20                | 406.37                  | 405.42               | 89.1          | 10.9             |
|                             |              | #40                | 363.57                  | 361.28               | 85.4          | 14.6             |
|                             |              | #60                | 370.51                  | 366.16               | 78.3          | 21.7             |
|                             |              | #140               | 350.46                  | 342.82               | 66.0          | 34.0             |
|                             |              | #200               | 350.25                  | 345.25               | 57.9          | 42.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 57.9

Weight of hydrometer sample = 61.96

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0150         | 1.0149            | 0.0136 | 12.0 | 13.1       | 0.0350         | 22.4          | 77.6             |
| 5.00                | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0  | 13.9       | 0.0228         | 17.9          | 82.1             |
| 15.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0135         | 13.4          | 86.6             |
| 30.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0096         | 13.4          | 86.6             |
| 60.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0068         | 11.9          | 88.1             |
| 250.00              | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0033         | 11.9          | 88.1             |
| 1440.00             | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0014         | 11.9          | 88.1             |

## Fractional Components

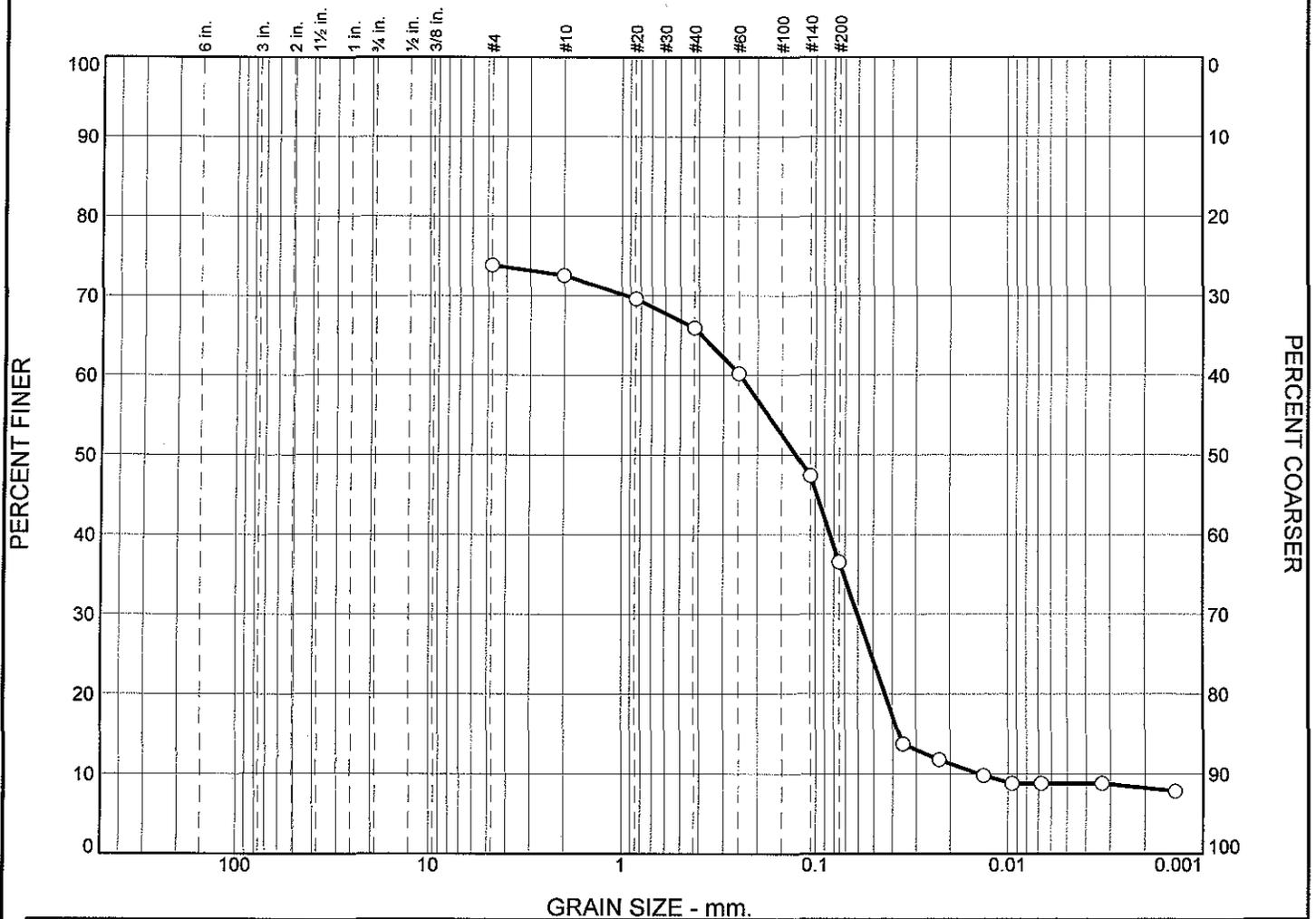
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.2      | 1.3     | 3.1  | 7.9  | 9.9  | 18.9    | 41.1  | 28.3 | 6.5  | 2.2  | 0.6     | 37.6  | 11.9 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95 |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|-----|
|     | 0.0162 | 0.0277 | 0.0411 | 0.0632 | 0.0819 | 0.2834 | 0.4135 | 1.4383 |     |

| Fineness Modulus |
|------------------|
| 0.88             |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders           | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |        |      |         | % Clay |
|---|----------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|---------|--------|
|   |                      |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med.   | Fine | V. Fine |        |
| ○ |                      |           |                 | 1.1             | 2.3             | 3.4             | 6.6             | 10.3            | 18.9           | 17.9           | 2.8    | 1.5  | 0.0     | 8.8    |
| ⊗ | LL                   | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |      |         |        |
| ○ |                      |           |                 | 0.2464          | 0.1262          | 0.0605          | 0.0368          | 0.0142          | 1.04           | 17.33          |        |      |         |        |
| ○ | Material Description |           |                 |                 |                 |                 |                 |                 |                | USCS           | AASHTO |      |         |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 505926    <b>Sample Number:</b> L0912918-04</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 505926

Sample Number: L0912918-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 59.60                       | 0.00         | #4                 | 536.41                  | 520.81               | 73.8          | 26.2             |
|                             |              | #10                | 482.88                  | 482.11               | 72.5          | 27.5             |
|                             |              | #20                | 412.83                  | 411.09               | 69.6          | 30.4             |
|                             |              | #40                | 380.04                  | 377.86               | 66.0          | 34.0             |
|                             |              | #60                | 373.26                  | 369.84               | 60.2          | 39.8             |
|                             |              | #140               | 354.81                  | 347.17               | 47.4          | 52.6             |
|                             |              | #200               | 352.99                  | 346.51               | 36.5          | 63.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 36.5

Weight of hydrometer sample = 59.60

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0140         | 1.0139            | 0.0136 | 11.0 | 13.4       | 0.0353         | 13.7          | 86.3             |
| 5.00                | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0  | 13.9       | 0.0228         | 11.7          | 88.3             |
| 15.00               | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0134         | 9.8           | 90.2             |
| 30.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0096         | 8.8           | 91.2             |
| 60.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0068         | 8.8           | 91.2             |
| 250.00              | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0033         | 8.8           | 91.2             |
| 1440.00             | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0014         | 7.8           | 92.2             |

## Fractional Components

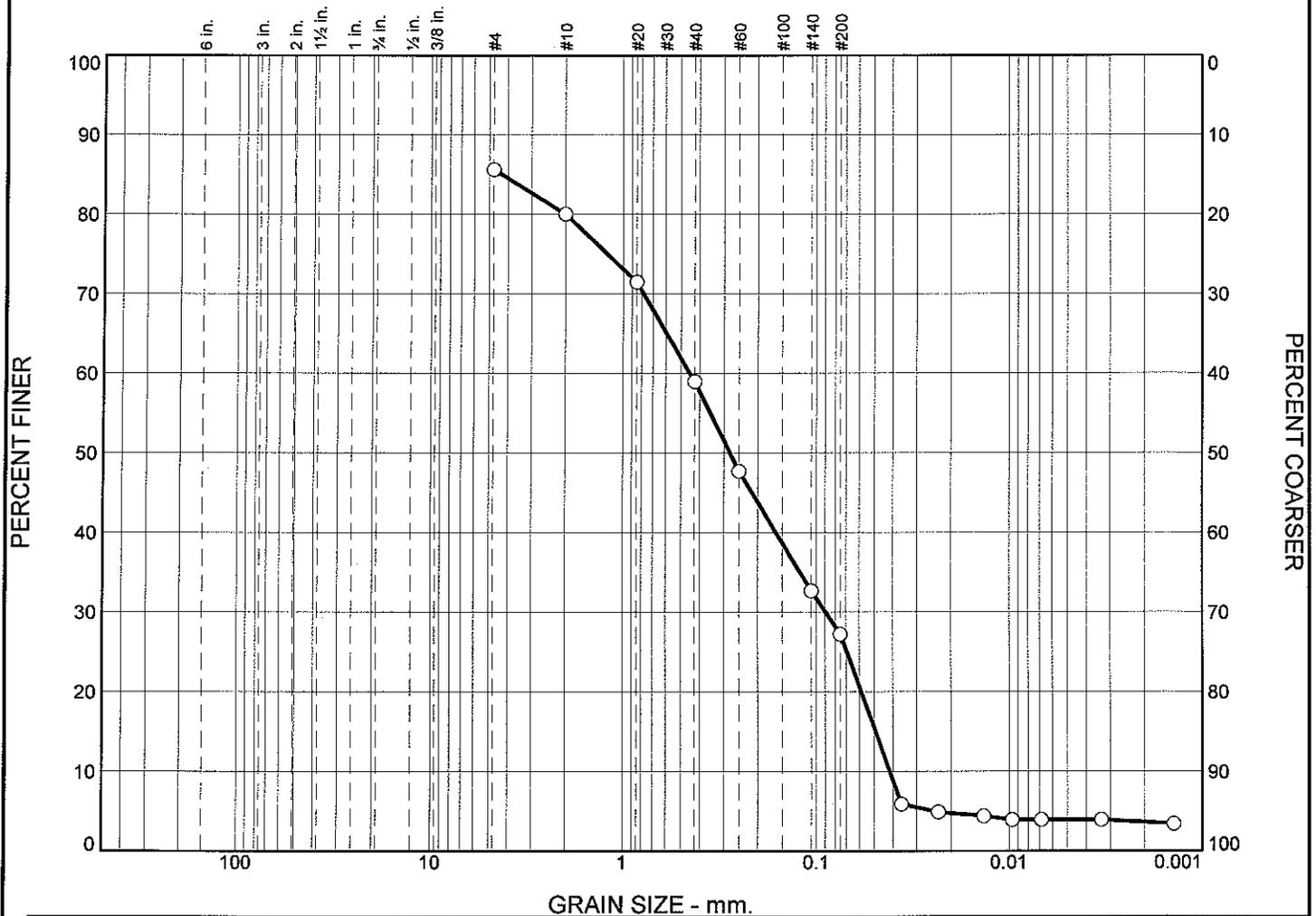
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.1      | 2.3     | 3.4  | 6.6  | 10.3 | 18.9    | 41.5  | 17.9 | 2.8  | 1.5  | 0.0     | 22.2  | 8.8  |

| D10    | D15    | D20    | D30    | D50    | D60    | D80 | D85 | D90 | D95 |
|--------|--------|--------|--------|--------|--------|-----|-----|-----|-----|
| 0.0142 | 0.0368 | 0.0434 | 0.0605 | 0.1262 | 0.2464 |     |     |     |     |

| Fineness Modulus | Cu    | Cc   |
|------------------|-------|------|
| 2.00             | 17.33 | 1.04 |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm. |           |           |            |         |        |        |        |         |        |       |      |         |        |  |
|------------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|-------|------|---------|--------|--|
| % Boulders       | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |       |      |         | % Clay |  |
|                  |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med.  | Fine | V. Fine |        |  |
| ○                |           |           | 4.5        | 6.9     | 11.2   | 14.2   | 12.2   | 13.6    | 16.3   | 1.1   | 0.6  | 0.0     | 3.9    |  |
| ×                | LL        | PL        | D85        | D60     | D50    | D30    | D15    | D10     | Cc     | Cu    |      |         |        |  |
| ○                |           |           | 4.3093     | 0.4504  | 0.2789 | 0.0895 | 0.0492 | 0.0415  | 0.43   | 10.87 |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506011    <b>Sample Number:</b> L0912918-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506011

Sample Number: L0912918-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 88.53                       | 0.00         | #4                 | 534.49                  | 521.77               | 85.6          | 14.4             |
|                             |              | #10                | 489.78                  | 484.81               | 80.0          | 20.0             |
|                             |              | #20                | 412.98                  | 405.42               | 71.5          | 28.5             |
|                             |              | #40                | 372.37                  | 361.28               | 59.0          | 41.0             |
|                             |              | #60                | 376.14                  | 366.16               | 47.7          | 52.3             |
|                             |              | #140               | 356.13                  | 342.82               | 32.6          | 67.4             |
|                             |              | #200               | 350.04                  | 345.25               | 27.2          | 72.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 27.2

Weight of hydrometer sample = 88.53

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0 | 13.9       | 0.0360         | 5.9           | 94.1             |
| 5.00                | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0 | 14.4       | 0.0232         | 4.9           | 95.1             |
| 15.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0 | 14.7       | 0.0135         | 4.4           | 95.6             |
| 30.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0096         | 3.9           | 96.1             |
| 60.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0068         | 3.9           | 96.1             |
| 250.00              | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0033         | 3.9           | 96.1             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 3.4           | 96.6             |

## Fractional Components

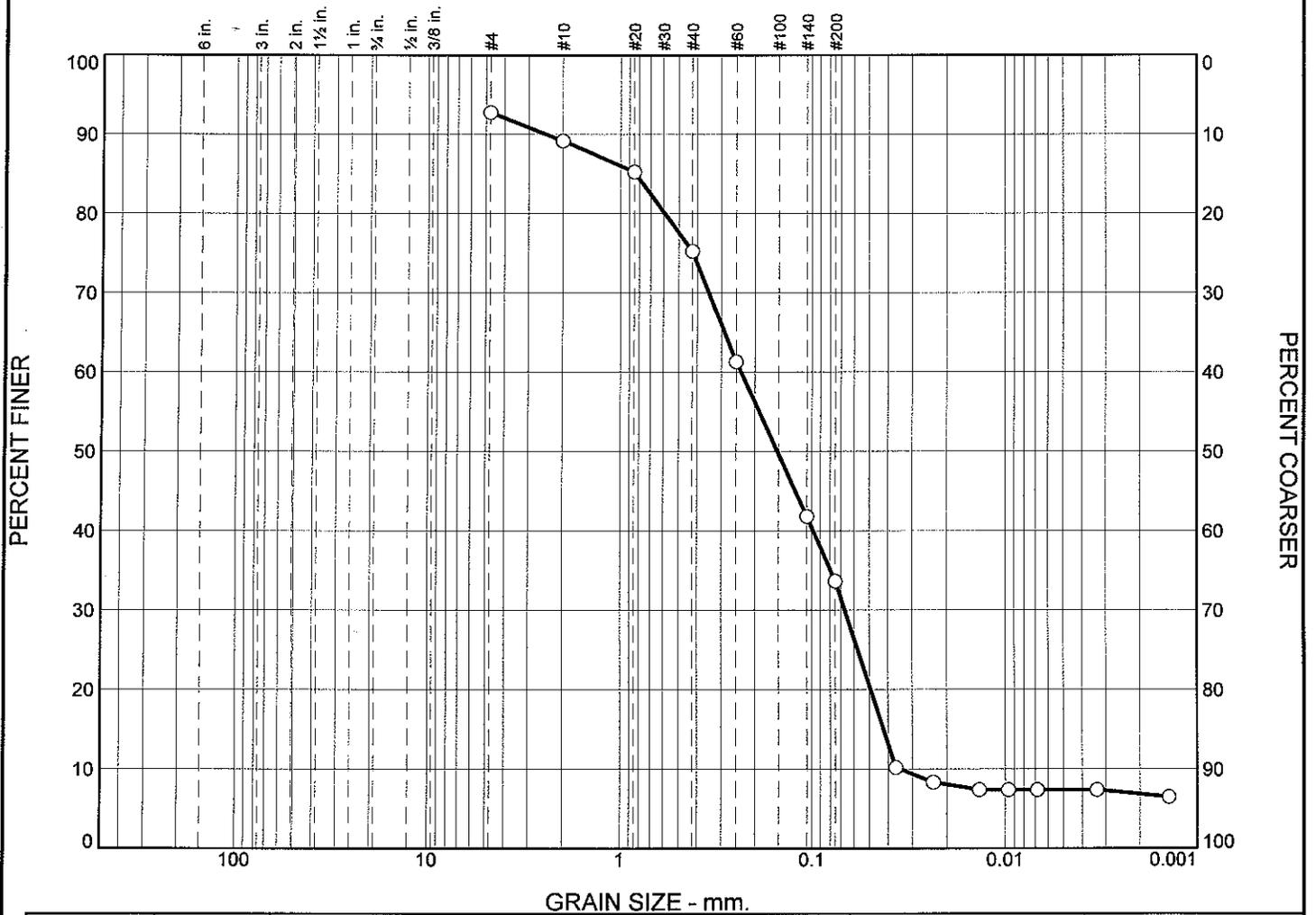
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.5      | 6.9     | 11.2 | 14.2 | 12.2 | 13.6    | 58.1  | 16.3 | 1.1  | 0.6  | 0.0     | 18.0  | 3.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0415          | 0.0492          | 0.0585          | 0.0895          | 0.2789          | 0.4504          | 1.9964          | 4.3093          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.03             | 10.87          | 0.43           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |                 | 2.9             | 3.2             | 8.4             | 16.3            | 15.8            | 17.8           | 18.2           | 1.9  | 0.2  | 0.0     | 7.4    |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.8348          | 0.2363          | 0.1522          | 0.0670          | 0.0422          | 0.0349          | 0.54           | 6.77           |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506012    <b>Sample Number:</b> L0912918-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506012

Sample Number: L0912918-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 58.08                       | 0.00         | #4                 | 525.01                  | 520.81               | 92.8          | 7.2              |
|                             |              | #10                | 484.19                  | 482.11               | 89.2          | 10.8             |
|                             |              | #20                | 413.37                  | 411.09               | 85.3          | 14.7             |
|                             |              | #40                | 383.68                  | 377.86               | 75.2          | 24.8             |
|                             |              | #60                | 377.95                  | 369.84               | 61.3          | 38.7             |
|                             |              | #140               | 358.49                  | 347.17               | 41.8          | 58.2             |
|                             |              | #200               | 351.24                  | 346.51               | 33.6          | 66.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 33.6

Weight of hydrometer sample = 58.08

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0110         | 1.0109            | 0.0136 | 8.0 | 14.2       | 0.0363         | 10.2          | 89.8             |
| 5.00                | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0 | 14.7       | 0.0234         | 8.3           | 91.7             |
| 15.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0136         | 7.4           | 92.6             |
| 30.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0096         | 7.4           | 92.6             |
| 60.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0068         | 7.4           | 92.6             |
| 250.00              | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0033         | 7.4           | 92.6             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 6.5           | 93.5             |

## Fractional Components

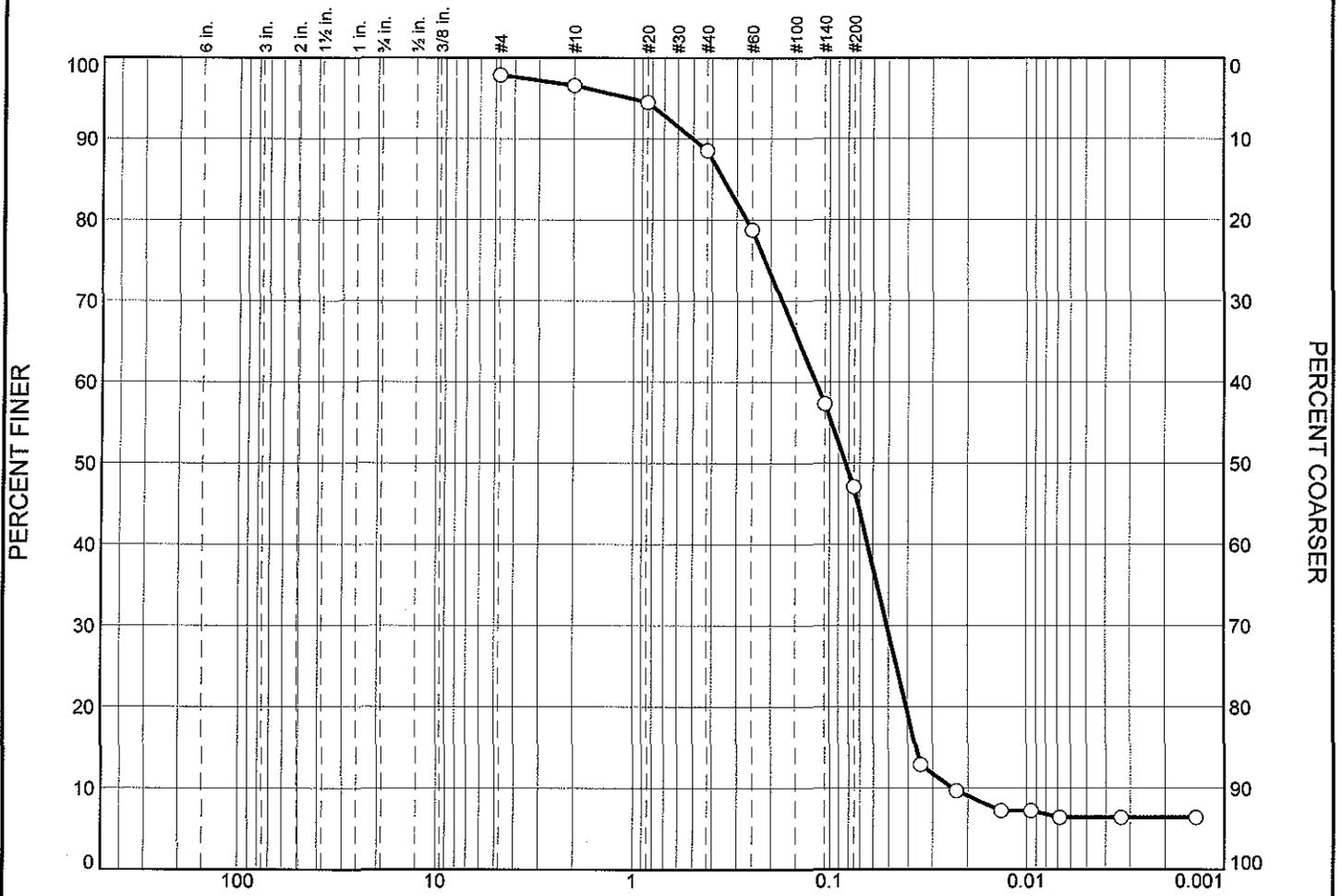
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.9      | 3.2     | 8.4  | 16.3 | 15.8 | 17.8    | 61.5  | 18.2 | 1.9  | 0.2  | 0.0     | 20.3  | 7.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0349          | 0.0422          | 0.0492          | 0.0670          | 0.1522          | 0.2363          | 0.5907          | 0.8348          | 2.4338          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.35             | 6.77           | 0.54           |

Alpha Analytical

# Particle Size Distribution Report



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506013

Sample Number: L0912918-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 93.56                       | 0.00         | #4                 | 523.77                  | 521.77               | 97.9          | 2.1              |
|                             |              | #10                | 486.01                  | 484.81               | 96.6          | 3.4              |
|                             |              | #20                | 407.35                  | 405.42               | 94.5          | 5.5              |
|                             |              | #40                | 366.85                  | 361.28               | 88.6          | 11.4             |
|                             |              | #60                | 375.32                  | 366.16               | 78.8          | 21.2             |
|                             |              | #140               | 362.93                  | 342.82               | 57.3          | 42.7             |
|                             |              | #200               | 354.81                  | 345.25               | 47.1          | 52.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 47.1

Weight of hydrometer sample = 93.56

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0160         | 1.0159            | 0.0136 | 13.0 | 12.9       | 0.0346         | 12.9          | 87.1             |
| 5.00                | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0  | 13.9       | 0.0228         | 9.6           | 90.4             |
| 15.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0135         | 7.2           | 92.8             |
| 30.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0096         | 7.2           | 92.8             |
| 60.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0068         | 6.4           | 93.6             |
| 250.00              | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0033         | 6.4           | 93.6             |
| 1440.00             | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0  | 15.0       | 0.0014         | 6.4           | 93.6             |

## Fractional Components

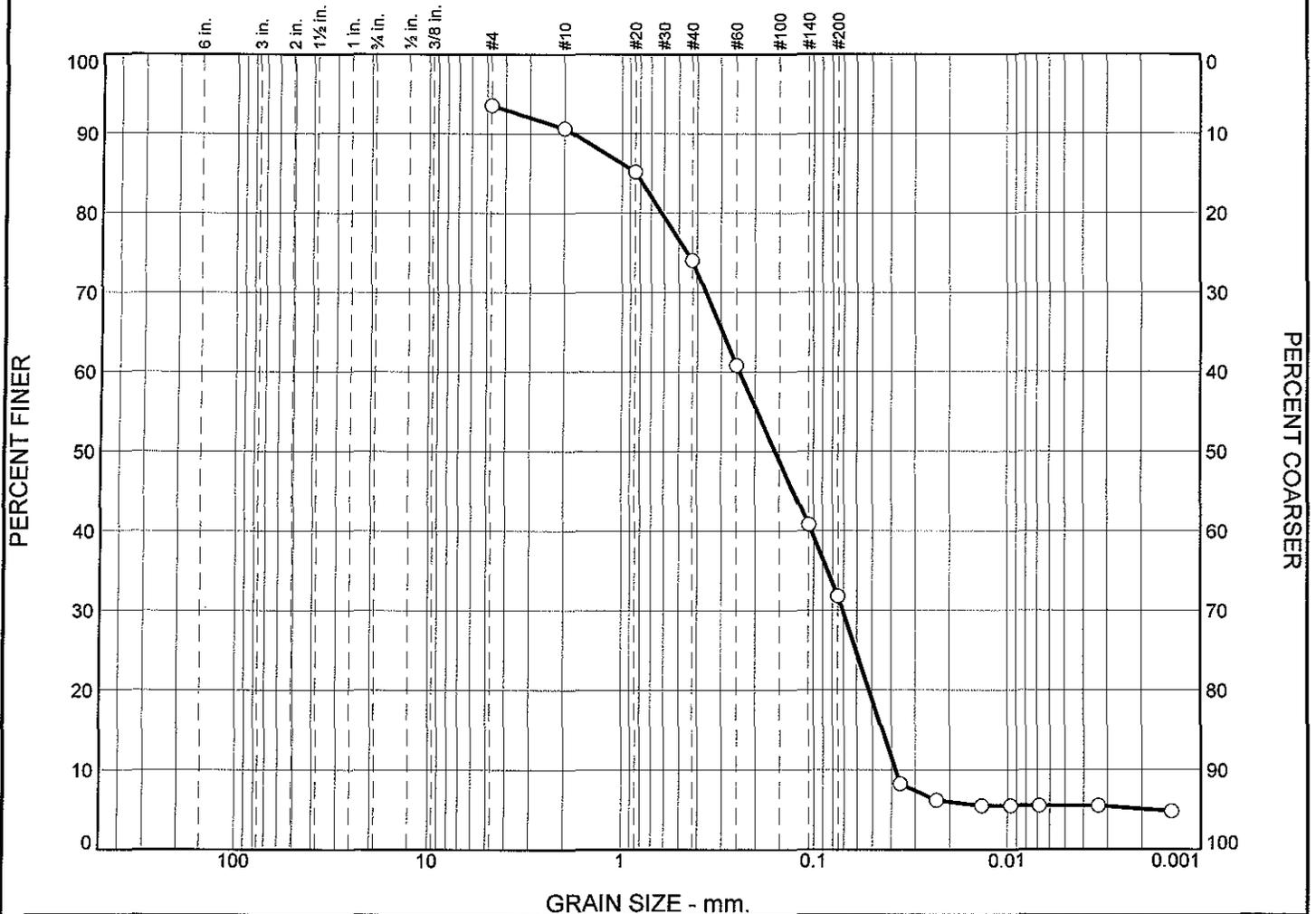
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 1.0      | 1.7     | 4.9  | 11.2 | 17.4 | 22.4    | 57.6  | 27.0 | 4.1  | 1.2  | 0.3     | 32.6 | 6.4   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0238          | 0.0363          | 0.0407          | 0.0510          | 0.0828          | 0.1182          | 0.2672          | 0.3504          | 0.5024          | 1.0386          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.70             | 4.95           | 0.92           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |           | 2.3        | 4.5     | 9.5    | 15.9   | 16.1   | 18.7    | 18.5   | 1.9  | 0.1  | 0.0     | 5.5    |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| <input type="radio"/>               |            |           | 0.8410    | 0.2412     | 0.1572  | 0.0709 | 0.0444 | 0.0380 | 0.55    | 6.34   |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 506026    <b>Sample Number:</b> L0912918-08</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912918  
**Location:** 506026  
**Sample Number:** L0912918-08  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 74.04                       | 0.00         | #4                 | 525.58                  | 520.81               | 93.6          | 6.4              |
|                             |              | #10                | 484.25                  | 482.11               | 90.7          | 9.3              |
|                             |              | #20                | 415.16                  | 411.09               | 85.2          | 14.8             |
|                             |              | #40                | 386.10                  | 377.86               | 74.0          | 26.0             |
|                             |              | #60                | 379.62                  | 369.84               | 60.8          | 39.2             |
|                             |              | #140               | 362.00                  | 347.17               | 40.8          | 59.2             |
|                             |              | #200               | 353.16                  | 346.51               | 31.8          | 68.2             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 31.8  
 Weight of hydrometer sample = 74.04  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0 | 13.9       | 0.0360         | 8.2           | 91.8             |
| 5.00                | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0 | 14.7       | 0.0234         | 6.2           | 93.8             |
| 15.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0136         | 5.5           | 94.5             |
| 30.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0096         | 5.5           | 94.5             |
| 60.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0068         | 5.5           | 94.5             |
| 250.00              | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0033         | 5.5           | 94.5             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 4.8           | 95.2             |

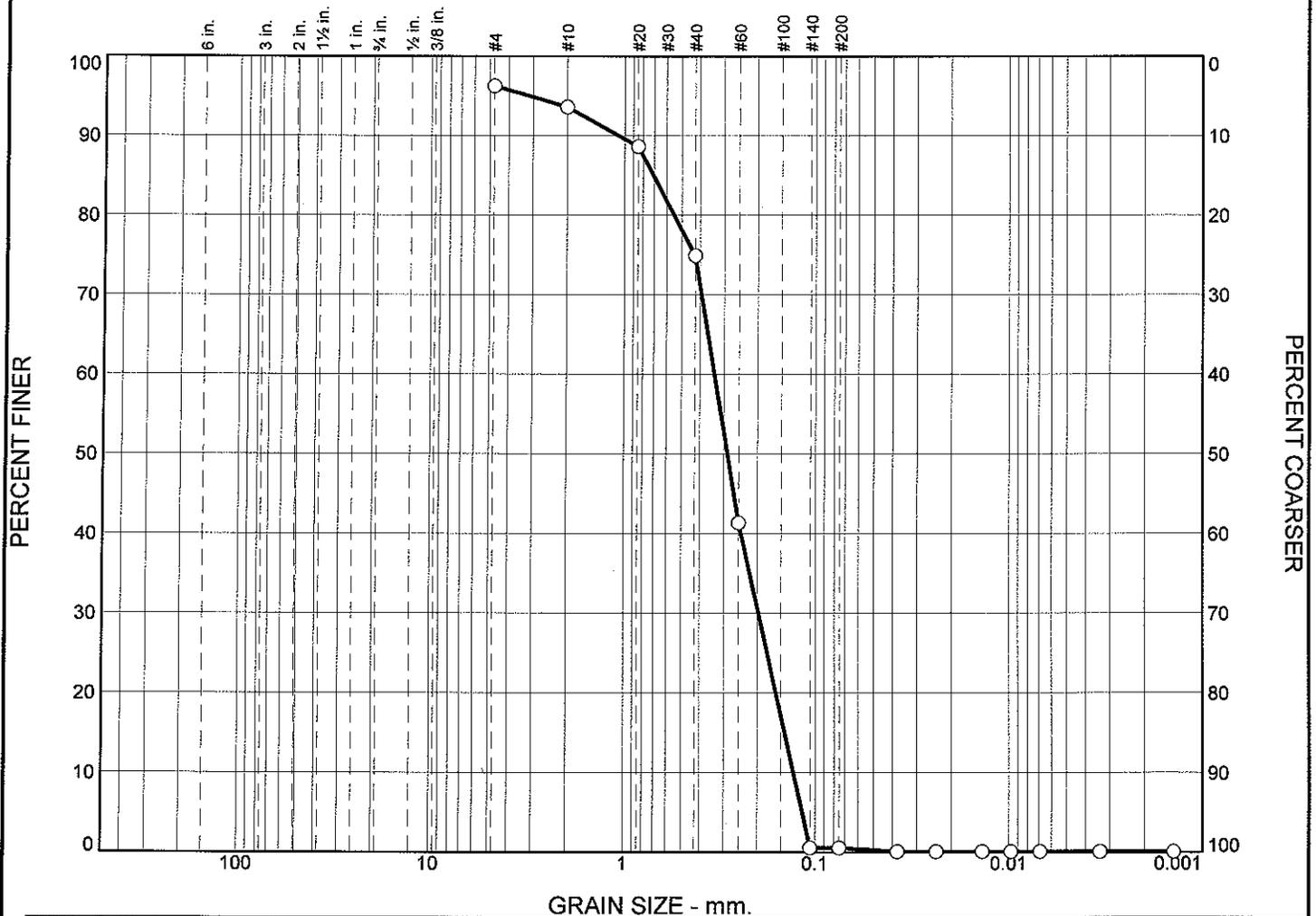
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.3      | 4.5     | 9.5  | 15.9 | 16.1 | 18.7    | 64.7  | 18.5 | 1.9  | 0.1  | 0.0     | 20.5  | 5.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0380          | 0.0444          | 0.0519          | 0.0709          | 0.1572          | 0.2412          | 0.6160          | 0.8410          | 1.8027          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.34             | 6.34           | 0.55           |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                             | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |               |      |         | % Clay |
|-----------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|---------------|------|---------|--------|
|                             |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med.          | Fine | V. Fine |        |
| ○                           |            |           |                 | 2.1             | 4.0             | 11.5            | 36.8            | 32.9            | 8.0            | 0.3            | 0.0           | 0.0  | 0.1     |        |
| ⊗                           | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |               |      |         |        |
| ○                           |            |           | 0.7072          | 0.3358          | 0.2867          | 0.1970          | 0.1437          | 0.1293          | 0.89           | 2.60           |               |      |         |        |
| <b>Material Description</b> |            |           |                 |                 |                 |                 |                 |                 |                | <b>USCS</b>    | <b>AASHTO</b> |      |         |        |
| ○                           |            |           |                 |                 |                 |                 |                 |                 |                | SP             |               |      |         |        |

**Project No.** L0912918    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring

○ **Source of Sample:** 506111    **Sample Number:** L0912918-09

**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506111

Sample Number: L0912918-09

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 70.35                       | 0.00         | #4                 | 524.40                  | 521.77               | 96.3          | 3.7              |
|                             |              | #10                | 486.68                  | 484.81               | 93.6          | 6.4              |
|                             |              | #20                | 408.91                  | 405.42               | 88.6          | 11.4             |
|                             |              | #40                | 370.94                  | 361.28               | 74.9          | 25.1             |
|                             |              | #60                | 389.79                  | 366.16               | 41.3          | 58.7             |
|                             |              | #140               | 371.50                  | 342.82               | 0.6           | 99.4             |
|                             |              | #200               | 345.25                  | 345.25               | 0.6           | 99.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 0.6

Weight of hydrometer sample = 70.35

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 0.1           | 99.9             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 0.1           | 99.9             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 0.1           | 99.9             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 0.1           | 99.9             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 0.1           | 99.9             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 0.1           | 99.9             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 0.1           | 99.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.1      | 4.0     | 11.5 | 36.8 | 32.9 | 8.0     | 93.2  | 0.3  | 0.0  | 0.0  |         | 0.3   | 0.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1293          | 0.1437          | 0.1596          | 0.1970          | 0.2867          | 0.3358          | 0.5495          | 0.7072          | 1.0743          | 3.1507          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.67             | 2.60           | 0.89           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506112

Sample Number: L0912918-10

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 75.83                       | 0.00         | #4                 | 521.87                  | 520.81               | 98.6          | 1.4              |
|                             |              | #10                | 483.62                  | 482.11               | 96.6          | 3.4              |
|                             |              | #20                | 415.20                  | 411.09               | 91.2          | 8.8              |
|                             |              | #40                | 388.41                  | 377.86               | 77.3          | 22.7             |
|                             |              | #60                | 396.54                  | 369.84               | 42.1          | 57.9             |
|                             |              | #140               | 377.86                  | 347.17               | 1.6           | 98.4             |
|                             |              | #200               | 346.88                  | 346.51               | 1.1           | 98.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 1.1

Weight of hydrometer sample = 75.83

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 0.2           | 99.8             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 0.2           | 99.8             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 0.2           | 99.8             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 0.2           | 99.8             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 0.2           | 99.8             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 0.2           | 99.8             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 0.2           | 99.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.6      | 4.4     | 11.7 | 38.4 | 32.7 | 8.5     | 95.7  | 0.7  | 0.0  | 0.0  |         | 0.7   | 0.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1267          | 0.1408          | 0.1566          | 0.1936          | 0.2817          | 0.3276          | 0.4867          | 0.6244          | 0.8010          | 1.5509          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.55             | 2.59           | 0.90           |

Alpha Analytical



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912918  
**Location:** 506113  
**Sample Number:** L0912918-11  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.36                       | 0.00         | #4                 | 523.56                  | 521.77               | 96.4          | 3.6              |
|                             |              | #10                | 486.20                  | 484.81               | 93.7          | 6.3              |
|                             |              | #20                | 408.71                  | 405.72               | 87.7          | 12.3             |
|                             |              | #40                | 369.38                  | 361.28               | 71.7          | 28.3             |
|                             |              | #60                | 383.70                  | 366.16               | 36.8          | 63.2             |
|                             |              | #140               | 351.50                  | 342.82               | 19.6          | 80.4             |
|                             |              | #200               | 345.37                  | 345.25               | 19.4          | 80.6             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 19.4  
 Weight of hydrometer sample = 50.36  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 4.3           | 95.7             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 4.3           | 95.7             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 4.3           | 95.7             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 4.3           | 95.7             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 4.3           | 95.7             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 4.3           | 95.7             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 4.3           | 95.7             |

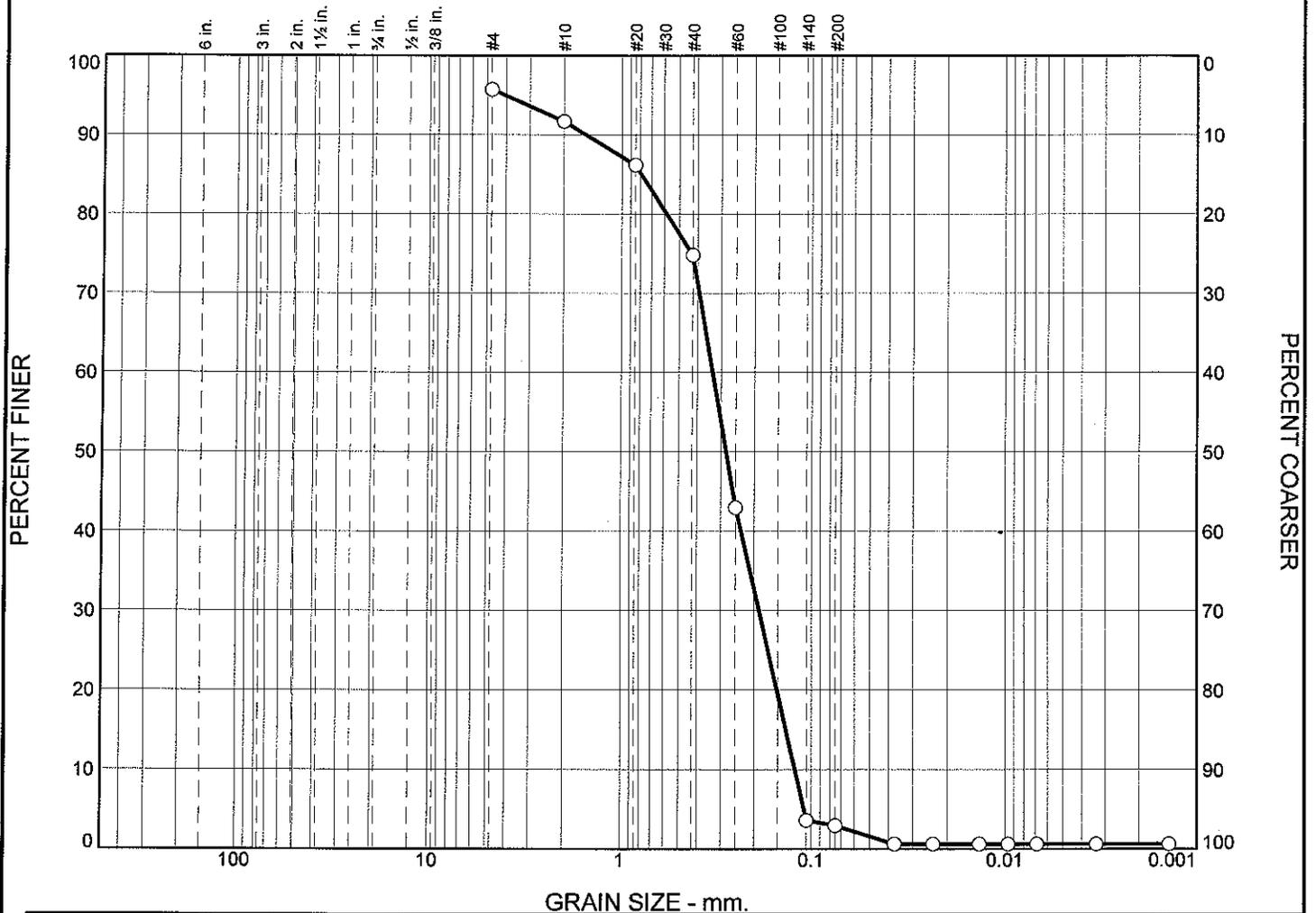
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 2.2      | 4.8     | 13.5 | 38.6 | 13.9 | 7.5     | 78.3  | 11.1 | 0.0  | 0.0  |         | 11.1 | 4.3   |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0489          | 0.0615          | 0.1081          | 0.1779          | 0.3055          | 0.3558          | 0.6087          | 0.7551          | 1.1759          | 3.0196          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.64             | 7.28           | 1.82           |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 3.2        | 4.5     | 9.7  | 34.5 | 31.8 | 8.9     | 1.7    | 0.0  | 0.0  | 0.0     | 0.6    |

| X | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|---|----|----|--------|--------|--------|--------|--------|--------|------|------|
| ○ |    |    | 0.7925 | 0.3321 | 0.2812 | 0.1885 | 0.1359 | 0.1219 | 0.88 | 2.73 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506126    <b>Sample Number:</b> L0912918-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506126

Sample Number: L0912918-12

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 61.65                       | 0.00         | #4                 | 523.45                  | 520.81               | 95.7          | 4.3              |
|                             |              | #10                | 484.60                  | 482.11               | 91.7          | 8.3              |
|                             |              | #20                | 414.50                  | 411.09               | 86.1          | 13.9             |
|                             |              | #40                | 384.86                  | 377.86               | 74.8          | 25.2             |
|                             |              | #60                | 389.47                  | 369.84               | 43.0          | 57.0             |
|                             |              | #140               | 371.43                  | 347.17               | 3.6           | 96.4             |
|                             |              | #200               | 346.91                  | 346.51               | 3.0           | 97.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 3.0

Weight of hydrometer sample = 61.65

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0373         | 0.6           | 99.4             |
| 5.00                | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0236         | 0.6           | 99.4             |
| 15.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0136         | 0.6           | 99.4             |
| 30.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0096         | 0.6           | 99.4             |
| 60.00               | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0068         | 0.6           | 99.4             |
| 250.00              | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0033         | 0.6           | 99.4             |
| 1440.00             | 20.0            | 1.0080         | 1.0079            | 0.0136 | 5.0 | 15.0       | 0.0014         | 0.6           | 99.4             |

## Fractional Components

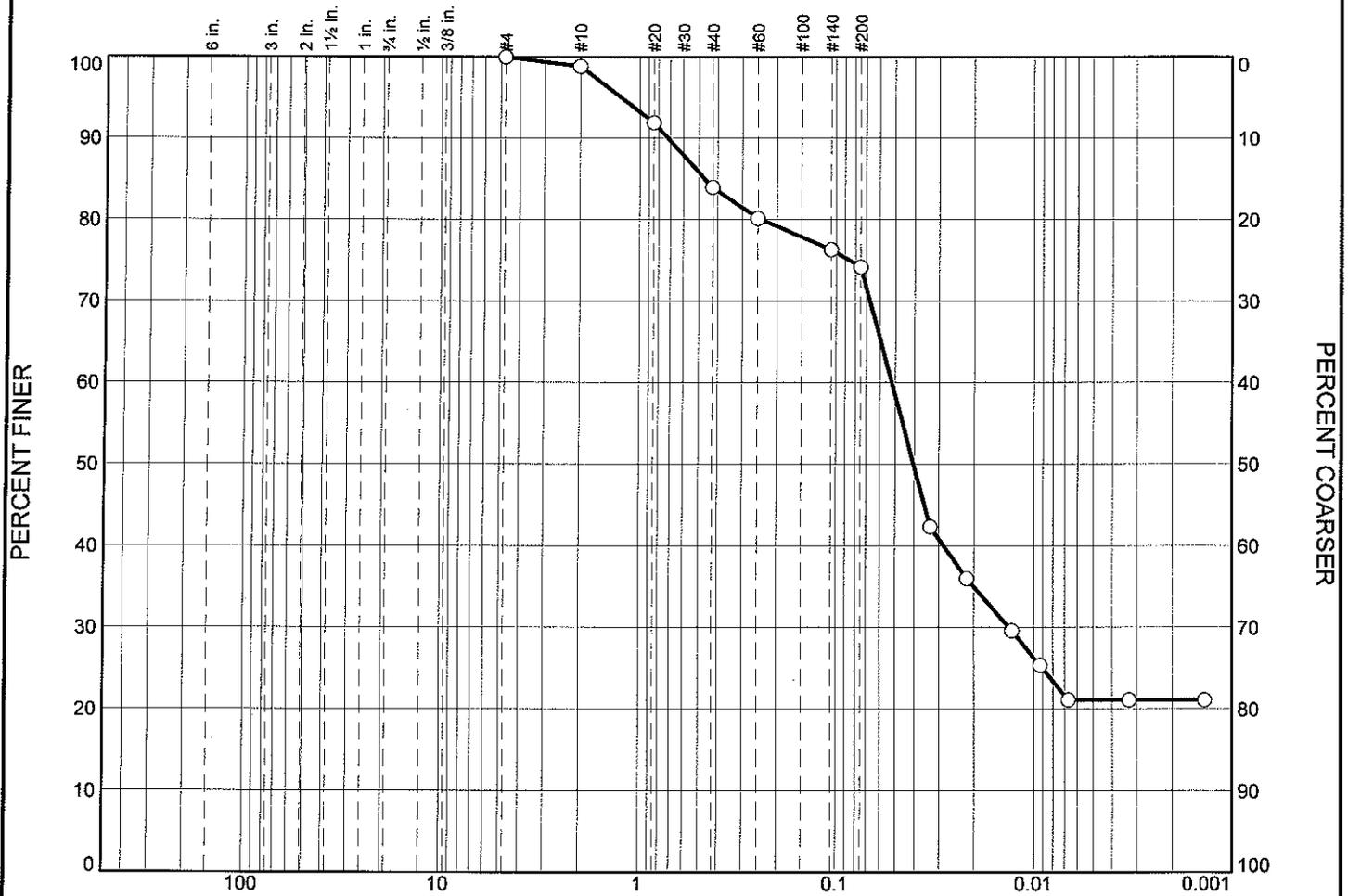
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.2      | 4.5     | 9.7  | 34.5 | 31.8 | 8.9     | 89.4  | 1.7  | 0.0  | 0.0  | 0.0     | 1.7   | 0.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1219          | 0.1359          | 0.1516          | 0.1885          | 0.2812          | 0.3321          | 0.5840          | 0.7925          | 1.5425          | 4.0732          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.70             | 2.73           | 0.88           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 0.9        | 5.6     | 7.4    | 5.6  | 3.2  | 10.0    | 25.7   | 9.4  | 8.8  | 2.0     | 21.1   |
| X | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.4661    | 0.0522     | 0.0404  | 0.0133 |      |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506211     <b>Sample Number:</b> L0912918-13</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506211

Sample Number: L0912918-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 56.10                       | 0.00         | #4                 | 521.80                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.45                  | 484.81               | 98.8          | 1.2              |
|                             |              | #20                | 409.29                  | 405.42               | 91.9          | 8.1              |
|                             |              | #40                | 365.75                  | 361.28               | 83.9          | 16.1             |
|                             |              | #60                | 368.28                  | 366.16               | 80.2          | 19.8             |
|                             |              | #140               | 344.99                  | 342.82               | 76.3          | 23.7             |
|                             |              | #200               | 346.45                  | 345.25               | 74.2          | 25.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 74.2

Weight of hydrometer sample = 56.10

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0200         | 1.0199            | 0.0136 | 17.0 | 11.8       | 0.0331         | 42.3          | 57.7             |
| 5.00                | 20.0            | 1.0170         | 1.0169            | 0.0136 | 14.0 | 12.6       | 0.0217         | 35.9          | 64.1             |
| 15.00               | 20.0            | 1.0140         | 1.0139            | 0.0136 | 11.0 | 13.4       | 0.0129         | 29.6          | 70.4             |
| 30.00               | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0  | 13.9       | 0.0093         | 25.3          | 74.7             |
| 60.00               | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0067         | 21.1          | 78.9             |
| 250.00              | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0033         | 21.1          | 78.9             |
| 1440.00             | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0014         | 21.1          | 78.9             |

## Fractional Components

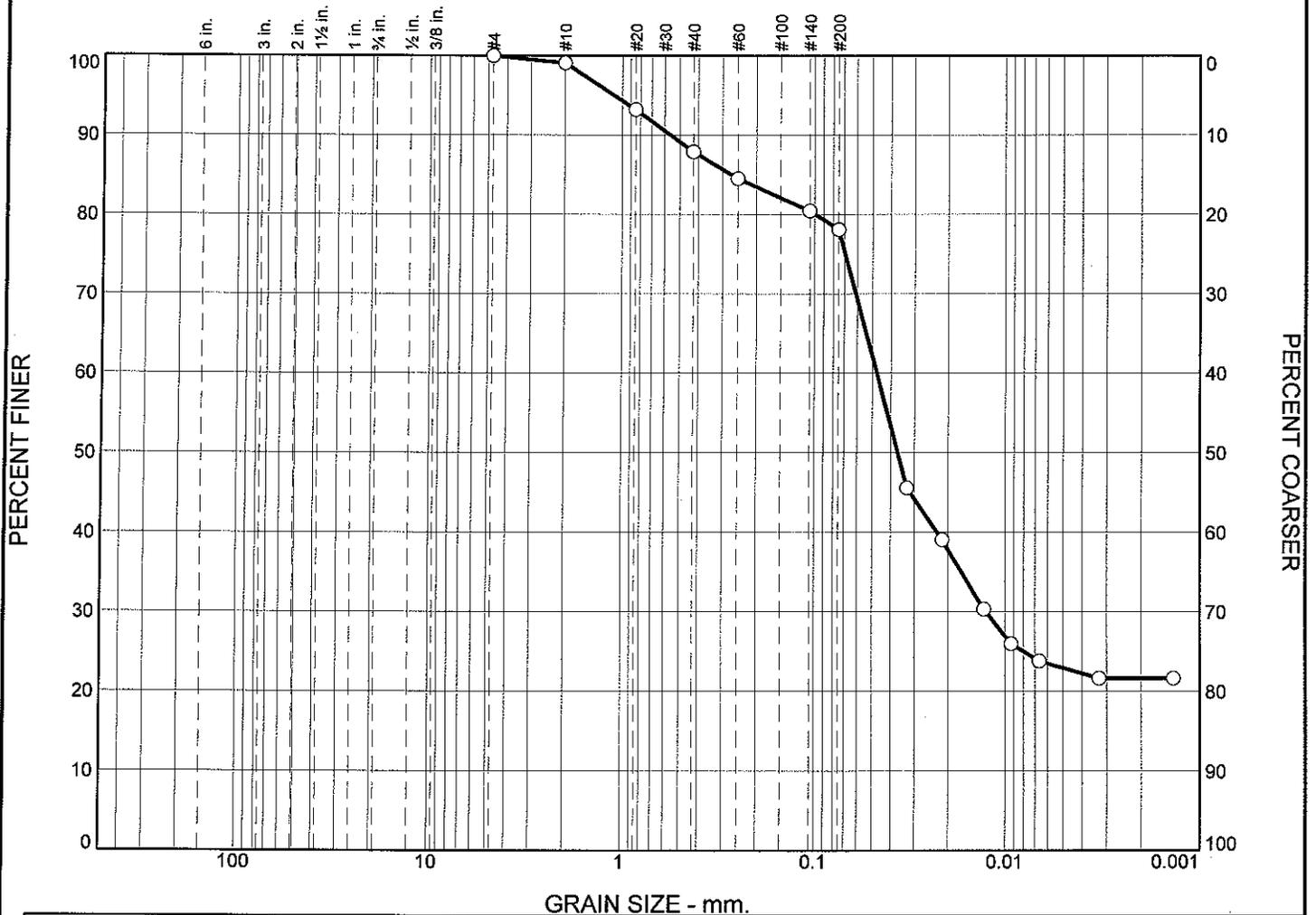
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 5.6     | 7.4  | 5.6  | 3.2  | 10.0    | 31.8  | 25.7 | 9.4  | 8.8  | 2.0     | 45.9  | 21.1 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0133 | 0.0404 | 0.0522 | 0.2413 | 0.4661 | 0.7200 | 1.2474 |

| Fineness Modulus |
|------------------|
| 0.59             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                             | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |         | % Silt      |               |      |         | % Clay |  |
|-----------------------------|------------|-----------|-----------|------------|---------|--------|------|------|---------|-------------|---------------|------|---------|--------|--|
|                             |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.        | Med.          | Fine | V. Fine |        |  |
| ○                           |            |           |           | 0.7        | 4.8     | 5.2    | 4.6  | 3.3  | 10.3    | 26.2        | 11.1          | 8.8  | 2.6     | 22.2   |  |
| X                           | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu          |               |      |         |        |  |
| ○                           |            |           | 0.2710    | 0.0473     | 0.0367  | 0.0126 |      |      |         |             |               |      |         |        |  |
| <b>Material Description</b> |            |           |           |            |         |        |      |      |         | <b>USCS</b> | <b>AASHTO</b> |      |         |        |  |
| ○                           |            |           |           |            |         |        |      |      |         |             |               |      |         |        |  |

**Project No.** L0912918     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 506212     **Sample Number:** L0912918-14

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**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506212

Sample Number: L0912918-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 57.62                       | 0.00         | #4                 | 520.82                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.64                  | 482.11               | 99.1          | 0.9              |
|                             |              | #20                | 414.47                  | 411.09               | 93.2          | 6.8              |
|                             |              | #40                | 380.93                  | 377.86               | 87.9          | 12.1             |
|                             |              | #60                | 371.79                  | 369.84               | 84.5          | 15.5             |
|                             |              | #140               | 349.51                  | 347.17               | 80.4          | 19.6             |
|                             |              | #200               | 347.86                  | 346.51               | 78.1          | 21.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 78.1

Weight of hydrometer sample = 57.62

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0210         | 1.0209            | 0.0136 | 18.0 | 11.5       | 0.0328         | 45.6          | 54.4             |
| 5.00                | 20.0            | 1.0180         | 1.0179            | 0.0136 | 15.0 | 12.3       | 0.0214         | 39.0          | 61.0             |
| 15.00               | 20.0            | 1.0140         | 1.0139            | 0.0136 | 11.0 | 13.4       | 0.0129         | 30.3          | 69.7             |
| 30.00               | 20.0            | 1.0120         | 1.0119            | 0.0136 | 9.0  | 13.9       | 0.0093         | 26.0          | 74.0             |
| 60.00               | 20.0            | 1.0110         | 1.0109            | 0.0136 | 8.0  | 14.2       | 0.0066         | 23.8          | 76.2             |
| 250.00              | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0033         | 21.6          | 78.4             |
| 1440.00             | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0014         | 21.6          | 78.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.7      | 4.8     | 5.2  | 4.6  | 3.3  | 10.3    | 28.2  | 26.2 | 11.1 | 8.8  | 2.6     | 48.7 | 22.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0126          | 0.0367          | 0.0473          | 0.0996          | 0.2710          | 0.5608          | 1.1057          |

| Fineness Modulus |
|------------------|
| 0.47             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506213

Sample Number: L0912918-15

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 44.65                       | 0.00         | #4                 | 521.80                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.01                  | 484.81               | 99.5          | 0.5              |
|                             |              | #20                | 408.76                  | 405.42               | 92.0          | 8.0              |
|                             |              | #40                | 366.07                  | 361.28               | 81.3          | 18.7             |
|                             |              | #60                | 368.61                  | 366.16               | 75.8          | 24.2             |
|                             |              | #140               | 345.61                  | 342.82               | 69.5          | 30.5             |
|                             |              | #200               | 346.95                  | 345.25               | 65.7          | 34.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 65.7

Weight of hydrometer sample = 44.65

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0160         | 1.0159            | 0.0136 | 13.0 | 12.9       | 0.0346         | 37.7          | 62.3             |
| 5.00                | 20.0            | 1.0140         | 1.0139            | 0.0136 | 11.0 | 13.4       | 0.0223         | 32.9          | 67.1             |
| 15.00               | 20.0            | 1.0110         | 1.0109            | 0.0136 | 8.0  | 14.2       | 0.0133         | 25.9          | 74.1             |
| 30.00               | 20.0            | 1.0100         | 1.0099            | 0.0136 | 7.0  | 14.4       | 0.0095         | 23.5          | 76.5             |
| 60.00               | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0068         | 21.1          | 78.9             |
| 250.00              | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0033         | 21.1          | 78.9             |
| 1440.00             | 20.0            | 1.0090         | 1.0089            | 0.0136 | 6.0  | 14.7       | 0.0014         | 21.1          | 78.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 6.1     | 9.6  | 8.0  | 5.1  | 11.6    | 40.4  | 22.6 | 8.4  | 6.0  | 1.0     | 38.0  | 21.1 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0180 | 0.0486 | 0.0640 | 0.3756 | 0.5406 | 0.7467 | 1.1974 |

Fineness Modulus

0.69

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506226

Sample Number: L0912918-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.48                       | 0.00         | #4                 | 520.98                  | 520.81               | 99.8          | 0.2              |
|                             |              | #10                | 484.16                  | 482.11               | 96.8          | 3.2              |
|                             |              | #20                | 415.76                  | 411.09               | 90.1          | 9.9              |
|                             |              | #40                | 381.08                  | 377.86               | 85.4          | 14.6             |
|                             |              | #60                | 372.12                  | 369.84               | 82.2          | 17.8             |
|                             |              | #140               | 356.97                  | 347.17               | 68.1          | 31.9             |
|                             |              | #200               | 349.34                  | 346.51               | 64.0          | 36.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 64.0

Weight of hydrometer sample = 69.48

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 10.3          | 89.7             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 10.3          | 89.7             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 10.3          | 89.7             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 10.3          | 89.7             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 10.3          | 89.7             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 10.3          | 89.7             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 10.3          | 89.7             |

## Fractional Components

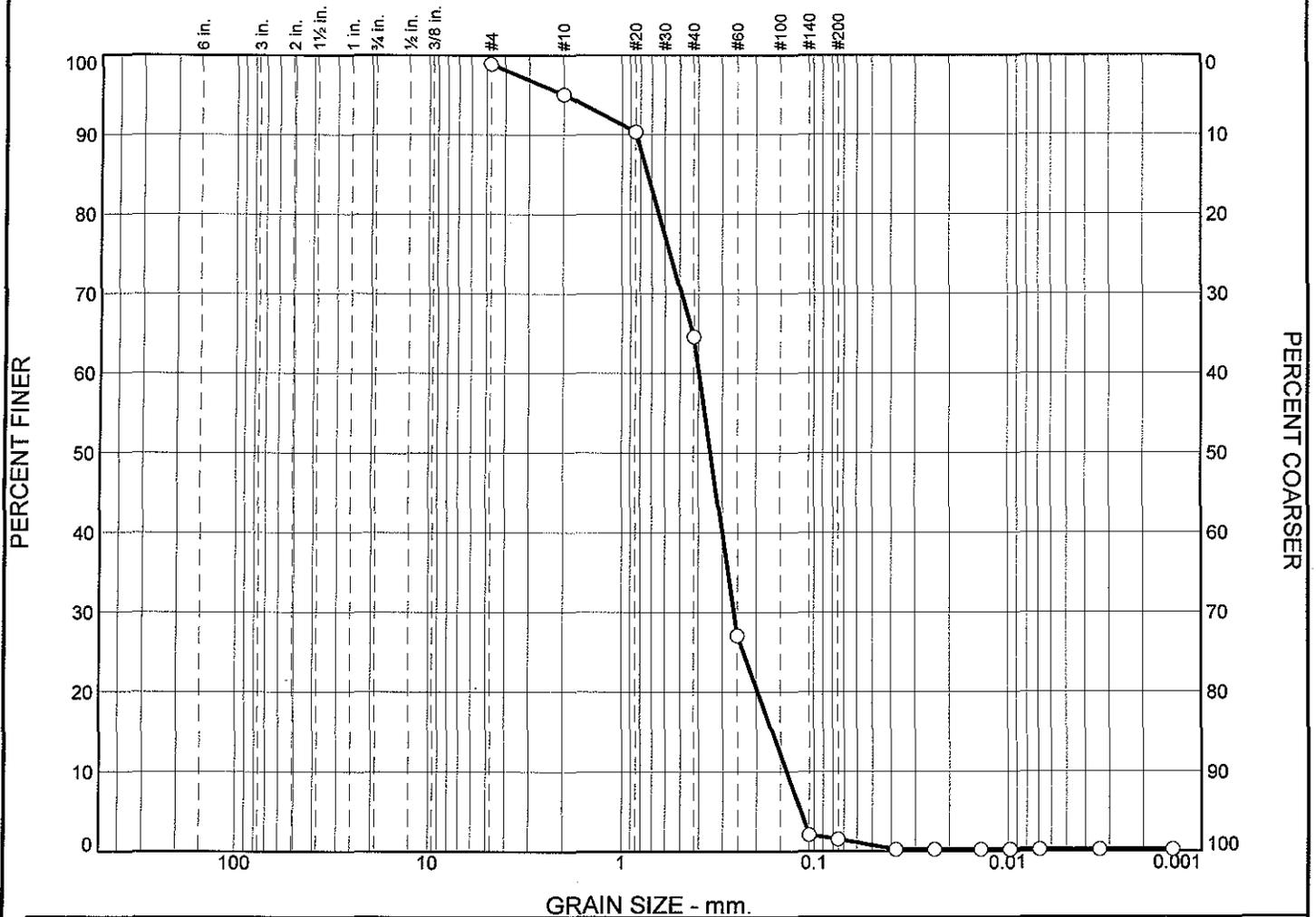
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.4      | 5.4     | 4.9  | 4.3  | 11.4 | 21.0    | 47.0  | 39.5 | 0.0  | 0.0  | 0.0     | 39.5  | 10.3 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0400          | 0.0427          | 0.0485          | 0.0627          | 0.0713          | 0.2191          | 0.3952          | 0.8395          | 1.5894          |

| Fineness Modulus |
|------------------|
| 0.65             |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 3.0        | 3.9     | 20.6   | 43.5   | 20.2   | 5.7     | 1.0    | 0.0  | 0.0  | 0.0     | 0.2    |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.7361    | 0.3983     | 0.3458  | 0.2606 | 0.1652 | 0.1391 | 1.23    | 2.86   |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506311    <b>Sample Number:</b> L0912918-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506311

Sample Number: L0912918-17

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 72.33                       | 0.00         | #4                 | 522.58                  | 521.77               | 98.9          | 1.1              |
|                             |              | #10                | 487.57                  | 484.81               | 95.1          | 4.9              |
|                             |              | #20                | 408.83                  | 405.42               | 90.3          | 9.7              |
|                             |              | #40                | 379.92                  | 361.28               | 64.6          | 35.4             |
|                             |              | #60                | 393.29                  | 366.16               | 27.1          | 72.9             |
|                             |              | #140               | 360.89                  | 342.82               | 2.1           | 97.9             |
|                             |              | #200               | 345.66                  | 345.25               | 1.5           | 98.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 1.5

Weight of hydrometer sample = 72.33

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 0.2           | 99.8             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 0.2           | 99.8             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 0.2           | 99.8             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 0.2           | 99.8             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 0.2           | 99.8             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 0.2           | 99.8             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 0.2           | 99.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.0      | 3.9     | 20.6 | 43.5 | 20.2 | 5.7     | 93.9  | 1.0  | 0.0  | 0.0  | 0.0     | 1.0   | 0.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1391          | 0.1652          | 0.1961          | 0.2606          | 0.3458          | 0.3983          | 0.6435          | 0.7361          | 0.8420          | 1.9768          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.84             | 2.86           | 1.23           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        |
| ○ |            |           |                 | 2.3             | 3.8             | 18.1            | 44.6            | 22.6            | 6.5            | 0.8            | 0.0  | 0.0  | 0.2    |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |
| ○ |            |           | 0.6871          | 0.3744          | 0.3271          | 0.2490          | 0.1574          | 0.1351          | 1.23           | 2.77           |      |      |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506312    <b>Sample Number:</b> L0912918-18</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |
| <p><b>Figure</b></p>  |                        |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506312

Sample Number: L0912918-18

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.65                       | 0.00         | #4                 | 521.14                  | 520.81               | 99.5          | 0.5              |
|                             |              | #10                | 483.92                  | 482.11               | 96.6          | 3.4              |
|                             |              | #20                | 414.01                  | 411.09               | 91.9          | 8.1              |
|                             |              | #40                | 391.99                  | 377.86               | 69.4          | 30.6             |
|                             |              | #60                | 394.42                  | 369.84               | 30.1          | 69.9             |
|                             |              | #140               | 364.76                  | 347.17               | 2.1           | 97.9             |
|                             |              | #200               | 346.97                  | 346.51               | 1.3           | 98.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 1.3

Weight of hydrometer sample = 62.65

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 0.2           | 99.8             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 0.2           | 99.8             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 0.2           | 99.8             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 0.2           | 99.8             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 0.2           | 99.8             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 0.2           | 99.8             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 0.2           | 99.8             |

## Fractional Components

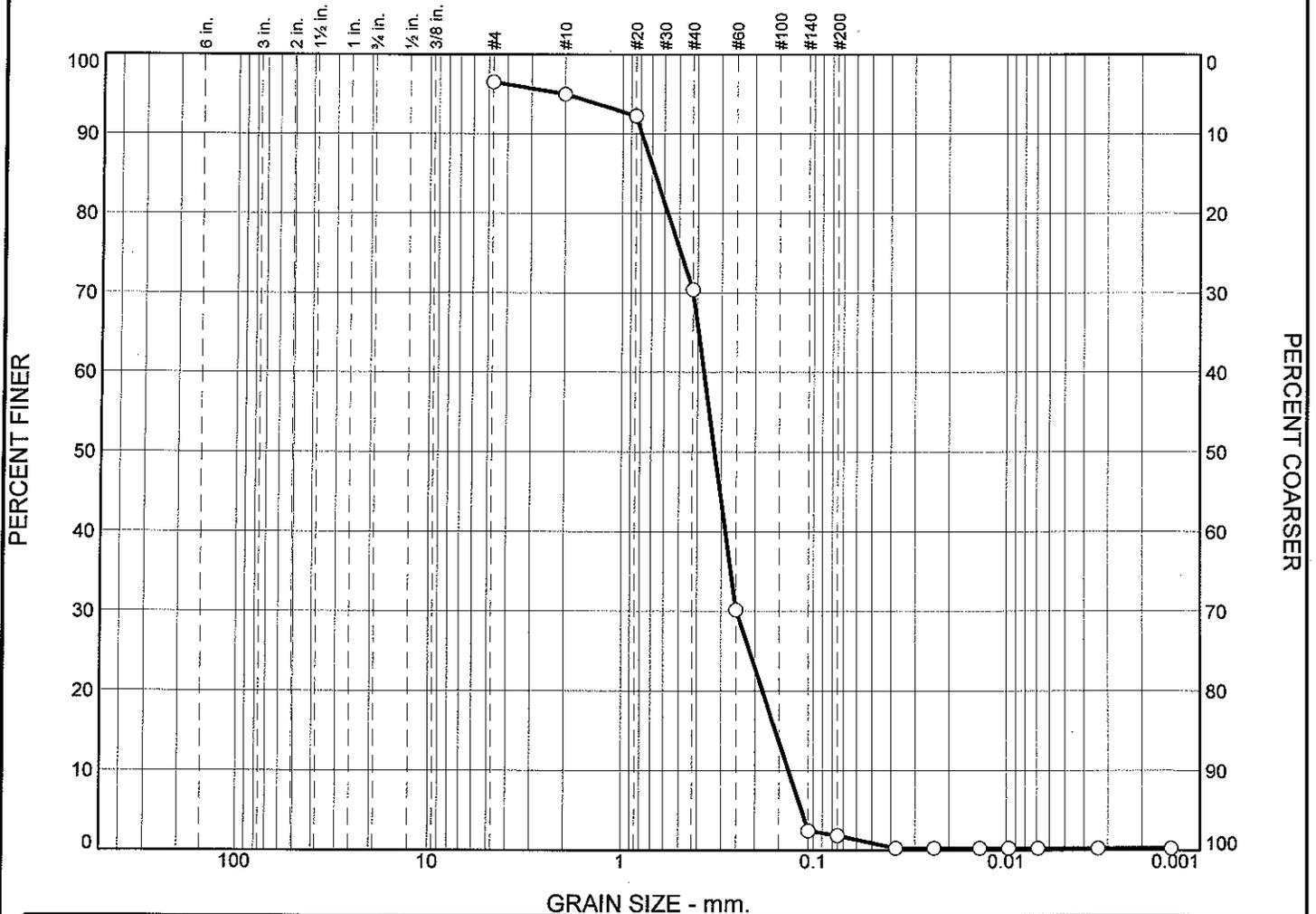
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.3      | 3.8     | 18.1 | 44.6 | 22.6 | 6.5     | 95.6  | 0.8  | 0.0  | 0.0  |         | 0.8   | 0.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1351          | 0.1574          | 0.1834          | 0.2490          | 0.3271          | 0.3744          | 0.5892          | 0.6871          | 0.8012          | 1.4953          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.72             | 2.77           | 1.23           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                       | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|-----------------------|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|                       |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/> |            |           |           | 1.2        | 2.2     | 17.3 | 45.4 | 22.3 | 6.4     | 1.1    | 0.0  | 0.0  |         | 0.3    |

| <input checked="" type="checkbox"/> | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|-------------------------------------|----|----|--------|--------|--------|--------|--------|--------|------|------|
| <input type="radio"/>               |    |    | 0.6757 | 0.3707 | 0.3249 | 0.2489 | 0.1564 | 0.1340 | 1.25 | 2.77 |

| Material Description  |  |  |  |  |  |  |  | USCS | AASHTO |
|-----------------------|--|--|--|--|--|--|--|------|--------|
| <input type="radio"/> |  |  |  |  |  |  |  | SP   |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912918 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 506313 <b>Sample Number:</b> L0912918-19 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506313

Sample Number: L0912918-19

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 75.66                       | 0.00         | #4                 | 524.42                  | 521.77               | 96.5          | 3.5              |
|                             |              | #10                | 485.95                  | 484.81               | 95.0          | 5.0              |
|                             |              | #20                | 407.50                  | 405.42               | 92.2          | 7.8              |
|                             |              | #40                | 377.83                  | 361.28               | 70.4          | 29.6             |
|                             |              | #60                | 396.59                  | 366.16               | 30.1          | 69.9             |
|                             |              | #140               | 363.79                  | 342.82               | 2.4           | 97.6             |
|                             |              | #200               | 345.69                  | 345.25               | 1.9           | 98.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 1.9

Weight of hydrometer sample = 75.66

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 0.3           | 99.7             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 0.3           | 99.7             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 0.3           | 99.7             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 0.3           | 99.7             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 0.3           | 99.7             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 0.3           | 99.7             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 0.3           | 99.7             |

## Fractional Components

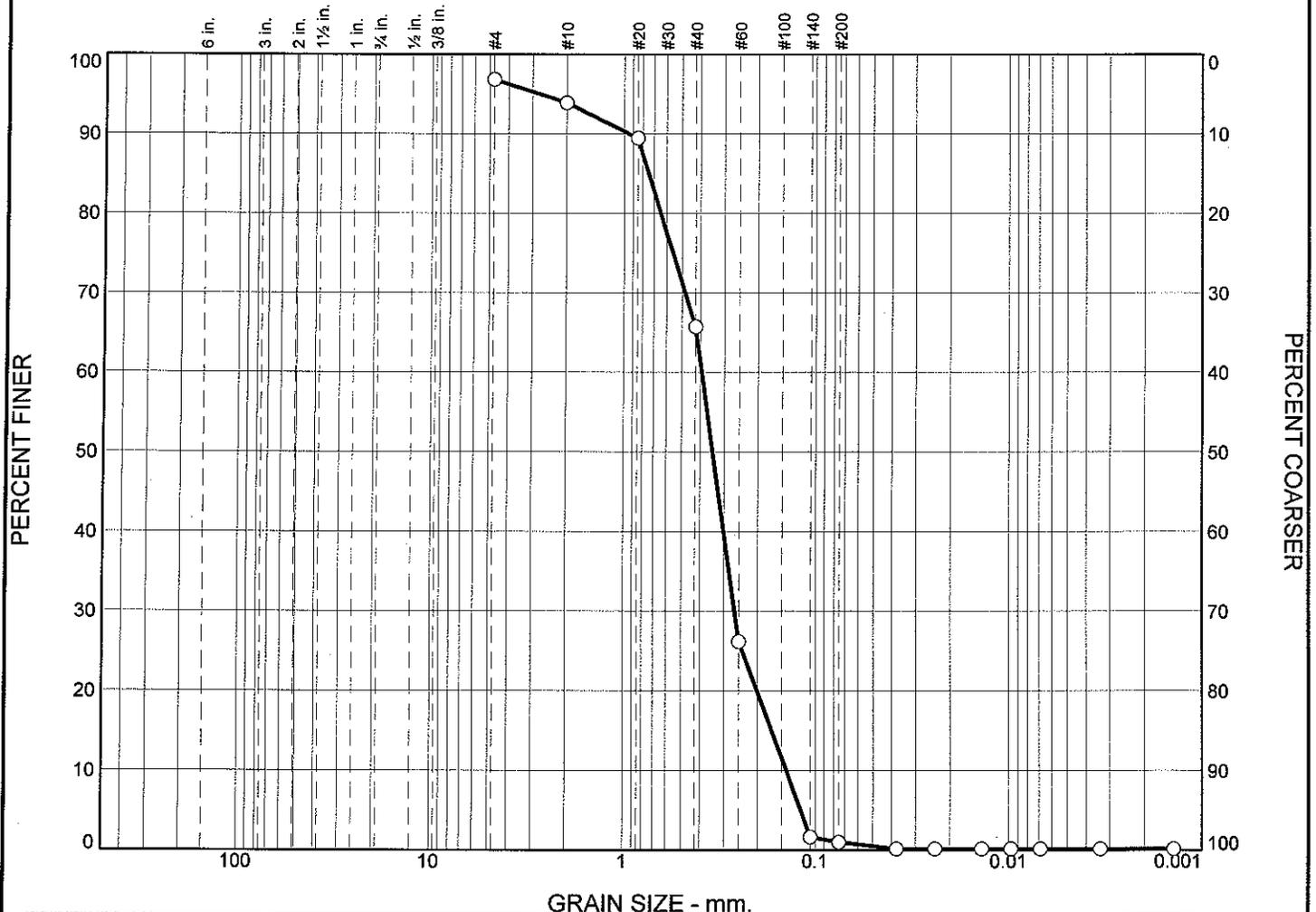
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.2      | 2.2     | 17.3 | 45.4 | 22.3 | 6.4     | 93.6  | 1.1  | 0.0  | 0.0  |         | 1.1   | 0.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1340          | 0.1564          | 0.1826          | 0.2489          | 0.3249          | 0.3707          | 0.5767          | 0.6757          | 0.7917          | 2.0107          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.76             | 2.77           | 1.25           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 2.3             | 3.6             | 19.0            | 45.2            | 19.7            | 5.6            | 0.6            | 0.0  | 0.0  |         | 0.2    |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.7465          | 0.3937          | 0.3443          | 0.2633          | 0.1692          | 0.1420          | 1.24           | 2.77           |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    | SP   |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912918    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506326    <b>Sample Number:</b> L0912918-20</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912918

Location: 506326

Sample Number: L0912918-20

USCS Classification: SP

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.59                       | 0.00         | #4                 | 522.90                  | 520.81               | 96.8          | 3.2              |
|                             |              | #10                | 484.02                  | 482.11               | 93.9          | 6.1              |
|                             |              | #20                | 414.01                  | 411.09               | 89.4          | 10.6             |
|                             |              | #40                | 393.44                  | 377.86               | 65.7          | 34.3             |
|                             |              | #60                | 395.78                  | 369.84               | 26.1          | 73.9             |
|                             |              | #140               | 363.24                  | 347.17               | 1.6           | 98.4             |
|                             |              | #200               | 346.94                  | 346.51               | 1.0           | 99.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 1.0

Weight of hydrometer sample = 65.59

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 0.2           | 99.8             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 0.2           | 99.8             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 0.2           | 99.8             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 0.2           | 99.8             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 0.2           | 99.8             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 0.2           | 99.8             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 0.2           | 99.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.3      | 3.6     | 19.0 | 45.2 | 19.7 | 5.6     | 93.1  | 0.6  | 0.0  | 0.0  |         | 0.6   | 0.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1420          | 0.1692          | 0.2016          | 0.2633          | 0.3443          | 0.3937          | 0.6452          | 0.7465          | 0.9448          | 2.7717          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.89             | 2.77           | 1.24           |

Alpha Analytical



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912918  
**Location:** 506326  
**Sample Number:** WG384169-1  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 63.11                       | 0.00         | #4                 | 523.81                  | 521.77               | 96.8          | 3.2              |
|                             |              | #10                | 486.79                  | 484.81               | 93.6          | 6.4              |
|                             |              | #20                | 408.41                  | 405.42               | 88.9          | 11.1             |
|                             |              | #40                | 377.88                  | 361.28               | 62.6          | 37.4             |
|                             |              | #60                | 391.17                  | 366.16               | 23.0          | 77.0             |
|                             |              | #140               | 349.08                  | 342.82               | 13.0          | 87.0             |
|                             |              | #200               | 345.52                  | 345.25               | 12.6          | 87.4             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 12.6  
 Weight of hydrometer sample = 63.11  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0377         | 2.2           | 97.8             |
| 5.00                | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0238         | 2.2           | 97.8             |
| 15.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0138         | 2.2           | 97.8             |
| 30.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0097         | 2.2           | 97.8             |
| 60.00               | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0069         | 2.2           | 97.8             |
| 250.00              | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0034         | 2.2           | 97.8             |
| 1440.00             | 20.0            | 1.0070         | 1.0069            | 0.0136 | 4.0 | 15.2       | 0.0014         | 2.2           | 97.8             |

**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.5      | 3.8     | 21.0 | 45.8 | 8.1  | 5.0     | 83.7  | 7.7  | 0.0  | 0.0  | 0.0     | 7.7   | 2.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0631          | 0.1256          | 0.1935          | 0.2747          | 0.3591          | 0.4105          | 0.6724          | 0.7671          | 1.0382          | 2.9178          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.89             | 6.51           | 2.91           |

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. NELAP Accredited.**

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A, 3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D, 9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.



Station 510

# CHAIN OF CUSTODY

PAGE 1 OF 3



Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: 20912918

## Report Information    Data Deliverables    Billing Information

FAX     EMAIL     Same as Client info    PO #:  
 ADEX     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

fed

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|   |        |         |       |    |    |
|---|--------|---------|-------|----|----|
| 5 | 506011 | 9/28/09 | 10:00 | SE | JB |
| 6 | 506012 | 9/28/09 | 10:17 | SE | JB |
| 7 | 506013 | 9/28/09 | 10:28 | SE | JB |
|   | 506025 | 9/28/09 | 10:10 | SE | JB |
| 8 | 506026 | 9/28/09 | 10:10 | SE | JB |
|   | 506027 | 9/29/09 | 10:10 | SE | JB |

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**

**Filtration**

Done  
 Not Needed

**Preservation**

Lab to do  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Relinquished By: *James Boych*    Date/Time: 9/28/09 15:33

Received By: *[Signature]*    Date/Time: 9/28/09 15:32

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY



01229  
02

Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Due Date:

Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

## Turn-Around Time

Standard

Rush (ONLY IF PRE-APPROVED)

Date Rec'd in Lab:

ALPHA Job #: 10912918

## Report Information Data Deliverables

FAX

EMAIL

ADEx

Add'l Deliverables

Same as Client info

PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### SAMPLE HANDLING

- Filtration
- Done
- Not Needed
- Lab to do
- Preservation
- Lab to do
- (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 506111    | 9/26/09    | 16:46 | SE            | JB                 |
| 10                             | 506112    | 9/26/09    | 17:07 | SE            | JB                 |
| 11                             | 506113    | 9/26/09    | 17:21 | SE            | JB                 |
|                                | 506125    | 9/26/09    | 16:58 | SE            | JB                 |
| 12                             | 506126    | 9/26/09    | 16:58 | SE            | JB                 |
|                                | 506127    | 9/26/09    | 16:58 | SE            | JB                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>James Bajek</i> | 9/26/09 19:12 | <i>Lee Weishar</i> | 9/26/09 19:17 |
| <i>Lee Weishar</i> | 9/28/09 09:13 | <i>P. Dilbert</i>  | 9/28/09 9:25  |
| <i>P. Dilbert</i>  | 9/28/09 10:20 | <i>Lee Weishar</i> | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 317

# CHAIN OF CUSTODY

PAGE 3 OF 3



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab: ALPHA Job #: 10912918

Report Information Data Deliverables Billing Information

FAX  EMAIL  Same as Client info PO #:

ADEx  Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program Criteria

fed

| ANALYSIS                    |        |               |         |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |
|-----------------------------|--------|---------------|---------|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|-----------------|
| total PCB congeners NOAA 18 | TOC    | grain size    | archive |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |  |                 |
| 13                          | 506211 | 9/28/09 08:05 | SE      | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| 14                          | 506212 | 9/28/09 08:16 | SE      | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| 15                          | 506213 | 9/28/09 08:20 | SE      | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1               |
| 16                          | 506225 | 9/28/09 08:10 | SE      | JB | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem   | 1               |
| 16                          | 506226 | 9/28/09 08:10 | SE      | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   | 1               |
|                             | 506227 | 9/28/09 08:10 | SE      | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch   | 1               |
|                             |        |               |         |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
|                             |        |               |         |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
|                             |        |               |         |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |
|                             |        |               |         |    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |                 |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
|                                | 506211    | 9/28/09    | 08:05 | SE            | JB                 |
|                                | 506212    | 9/28/09    | 08:16 | SE            | JB                 |
|                                | 506213    | 9/28/09    | 08:20 | SE            | JB                 |
|                                | 506225    | 9/28/09    | 08:10 | SE            | JB                 |
|                                | 506226    | 9/28/09    | 08:10 | SE            | JB                 |
|                                | 506227    | 9/28/09    | 08:10 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

|                    |              |                    |              |
|--------------------|--------------|--------------------|--------------|
| Relinquished By:   | Date/Time    | Received By:       | Date/Time    |
| <i>James Bajik</i> | 9/28/09 1522 | <i>[Signature]</i> | 9/28/09 1522 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912919  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912919-01                | 506411           | NEW BEDFORD, MA            | 09/26/09 12:55                  |
| L0912919-02                | 506412           | NEW BEDFORD, MA            | 09/26/09 13:47                  |
| L0912919-03                | 506413           | NEW BEDFORD, MA            | 09/26/09 14:02                  |
| L0912919-04                | 506426           | NEW BEDFORD, MA            | 09/26/09 13:03                  |
| L0912919-05                | 508236           | NEW BEDFORD, MA            | 09/26/09 13:12                  |
| L0912919-06                | 506511           | NEW BEDFORD, MA            | 09/26/09 12:05                  |
| L0912919-07                | 506512           | NEW BEDFORD, MA            | 09/26/09 12:20                  |
| L0912919-08                | 506513           | NEW BEDFORD, MA            | 09/26/09 12:27                  |
| L0912919-09                | 506526           | NEW BEDFORD, MA            | 09/26/09 12:12                  |
| L0912919-10                | 506611           | NEW BEDFORD, MA            | 09/26/09 08:50                  |
| L0912919-11                | 506612           | NEW BEDFORD, MA            | 09/26/09 11:10                  |
| L0912919-12                | 506613           | NEW BEDFORD, MA            | 09/26/09 11:15                  |
| L0912919-13                | 506626           | NEW BEDFORD, MA            | 09/26/09 09:15                  |
| L0912919-14                | 506711           | NEW BEDFORD, MA            | 09/24/09 16:24                  |
| L0912919-15                | 506712           | NEW BEDFORD, MA            | 09/24/09 16:48                  |
| L0912919-16                | 506713           | NEW BEDFORD, MA            | 09/24/09 17:07                  |
| L0912919-17                | 506726           | NEW BEDFORD, MA            | 09/24/09 16:41                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 26, 2009. The report was ammended to include revised Grain Size data.

The WG384170-1 Laboratory Duplicate RPD is outside the acceptance criteria for sieve,gravel (100%), % very fine sand (22%), clay (39%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

**Case Narrative (continued)**

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-01  
**Client ID:** 506411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:55  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 40.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-02  
**Client ID:** 506412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 13:47  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 17.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 47.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-03  
**Client ID:** 506413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 14:02  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 42.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 11.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-04  
**Client ID:** 506426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 13:03  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.900  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 51.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 20.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-05  
**Client ID:** 508236  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 13:12  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 13.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-06  
**Client ID:** 506511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:05  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 38.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 17.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-07  
**Client ID:** 506512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:20  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 7.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 38.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 13.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-08  
**Client ID:** 506513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:27  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.500  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 49.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 15.0   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-09  
**Client ID:** 506526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 12:12  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 5.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 8.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 44.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 16.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-10  
**Client ID:** 506611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 08:50  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.30   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 27.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 9.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-11  
**Client ID:** 506612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 11:10  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 14.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 29.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-12  
**Client ID:** 506613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 11:15  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 12.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 11.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 38.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-13  
**Client ID:** 506626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/26/09 09:15  
**Date Received:** 09/28/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.900  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.2   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 46.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 23.7   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-14  
**Client ID:** 506711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 16:24  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 57.9   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 20.4   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-15  
**Client ID:** 506712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 16:48  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.80   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.90   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.10   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 25.8   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-16  
**Client ID:** 506713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 17:07  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.40   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.20   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.70   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 53.5   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912919-17  
**Client ID:** 506726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 16:41  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 2.50   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.60   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.00   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.6   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 54.3   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 23.1   |           | %     | 0.100 | 1               | -             | 10/13/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912919

**Report Date:** 02/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG384170-1 QC Sample: L0912919-17 Client ID: 506726 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 0.3           | 0.900            | %     | 100 | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 1.5           | 1.60             | %     | 6   |      | 20         |
| Coarse Sand (0.50-1.00 mm)   | 2.5           | 2.20             | %     | 13  |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 3.6           | 3.60             | %     | 0   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 3.0           | 2.60             | %     | 14  |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 11.6          | 14.5             | %     | 22  | Q    | 20         |
| Silt - (1.95-62.5 um)  | 54.3          | 58.7             | %     | 8   |      | 20         |
| Clay - (<1.95 um)  | 23.1          | 15.6             | %     | 39  | Q    | 20         |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### Sample Receipt and Container Information

Were project specific reporting limits specified? YES

#### Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| A      | Absent       |
| B      | Absent       |

#### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912919-01A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-02A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-03A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-04A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-05A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-06A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-07A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-08A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912919-09A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-10A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-11A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-12A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-13A | Glass 250ml unpreserved | B      | N/A | 1.6        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-14A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-15A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-16A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912919-17A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCS D** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MS D** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912919  
**Report Date:** 02/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

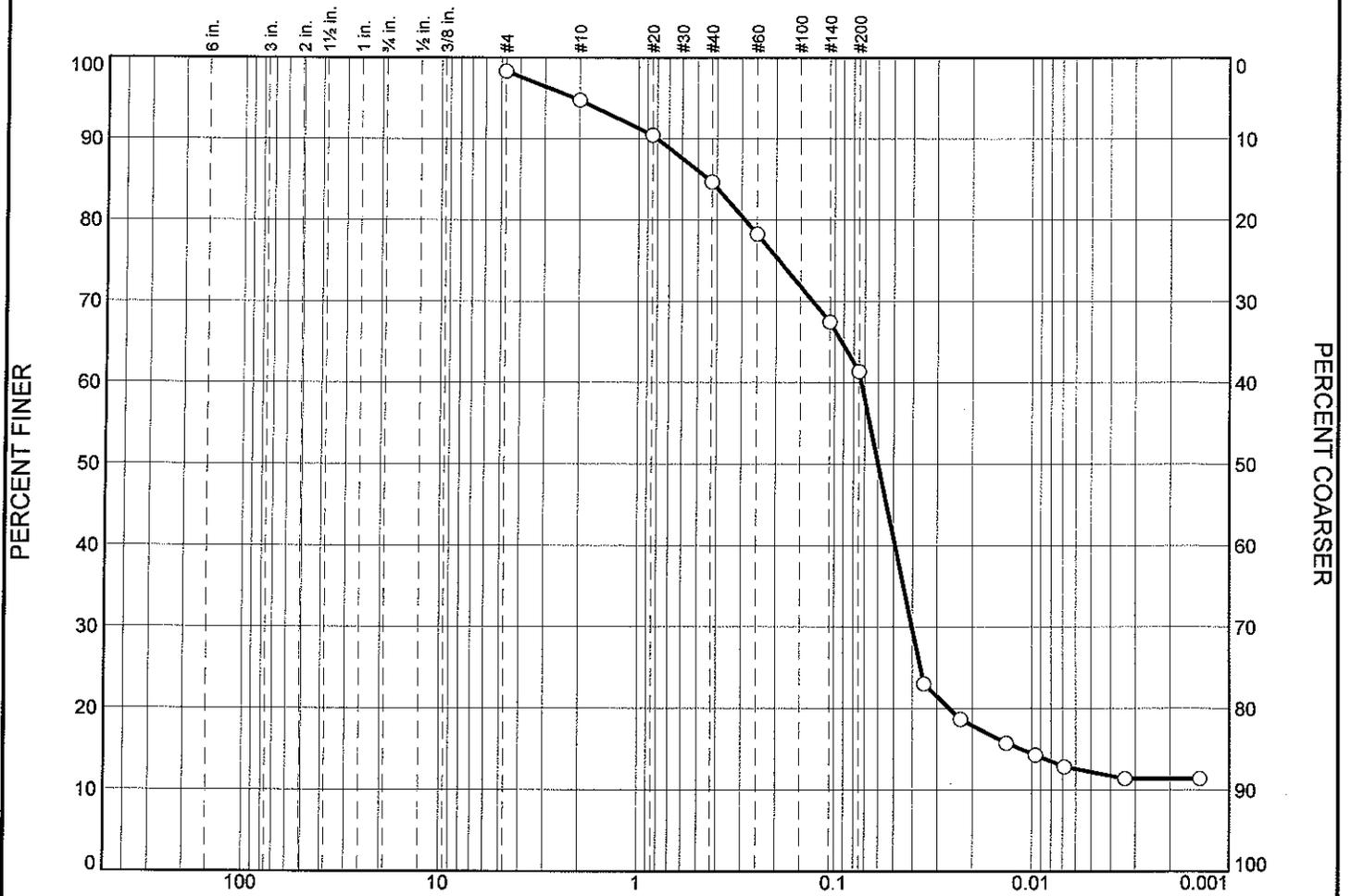
Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Sand          |                 |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 | % Granules      | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 2.8             | 3.5             | 5.3             | 7.8             | 8.7             | 17.3           | 30.4           | 5.2  | 3.2  | 1.7    | 11.7    |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 0.4409          | 0.0730          | 0.0599          | 0.0402          | 0.0113          |                 |                |                |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912919      <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506411      <b>Sample Number:</b> L0912919-01</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506411

Sample Number: L0912919-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 67.69                       | 0.00         | #4                 | 521.95                  | 520.81               | 98.3          | 1.7              |
|                             |              | #10                | 484.52                  | 482.11               | 94.8          | 5.2              |
|                             |              | #20                | 414.00                  | 411.09               | 90.5          | 9.5              |
|                             |              | #40                | 381.76                  | 377.86               | 84.7          | 15.3             |
|                             |              | #60                | 374.21                  | 369.84               | 78.2          | 21.8             |
|                             |              | #140               | 354.47                  | 347.17               | 67.5          | 32.5             |
|                             |              | #200               | 350.63                  | 346.51               | 61.4          | 38.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 61.4

Weight of hydrometer sample = 67.69

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0160         | 1.0158            | 0.0138 | 13.0 | 12.9       | 0.0350         | 23.0          | 77.0             |
| 5.00                | 19.0            | 1.0130         | 1.0128            | 0.0138 | 10.0 | 13.6       | 0.0228         | 18.6          | 81.4             |
| 15.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0134         | 15.7          | 84.3             |
| 30.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0096         | 14.3          | 85.7             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 12.8          | 87.2             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 11.4          | 88.6             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 11.4          | 88.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.8      | 3.5     | 5.3  | 7.8  | 8.7  | 17.3    | 42.6  | 30.4 | 5.2  | 3.2  | 1.7     | 40.5  | 11.7 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0113          | 0.0261          | 0.0402          | 0.0599          | 0.0730          | 0.2889          | 0.4409          | 0.8046          | 2.1224          |

Fineness Modulus

0.74

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506412

Sample Number: L0912919-02

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.86                       | 0.00         | #4                 | 528.09                  | 521.77               | 91.0          | 9.0              |
|                             |              | #10                | 485.64                  | 484.81               | 89.8          | 10.2             |
|                             |              | #20                | 406.21                  | 405.42               | 88.6          | 11.4             |
|                             |              | #40                | 363.33                  | 361.28               | 85.7          | 14.3             |
|                             |              | #60                | 368.33                  | 366.16               | 82.6          | 17.4             |
|                             |              | #140               | 347.93                  | 342.82               | 75.3          | 24.7             |
|                             |              | #200               | 349.17                  | 345.25               | 69.7          | 30.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 69.7

Weight of hydrometer sample = 69.86

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0170         | 1.0168            | 0.0138 | 14.0 | 12.6       | 0.0347         | 26.9          | 73.1             |
| 5.00                | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0231         | 18.9          | 81.1             |
| 15.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0137         | 14.1          | 85.9             |
| 30.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0097         | 14.1          | 85.9             |
| 60.00               | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0069         | 12.5          | 87.5             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 12.5          | 87.5             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 12.5          | 87.5             |

## Fractional Components

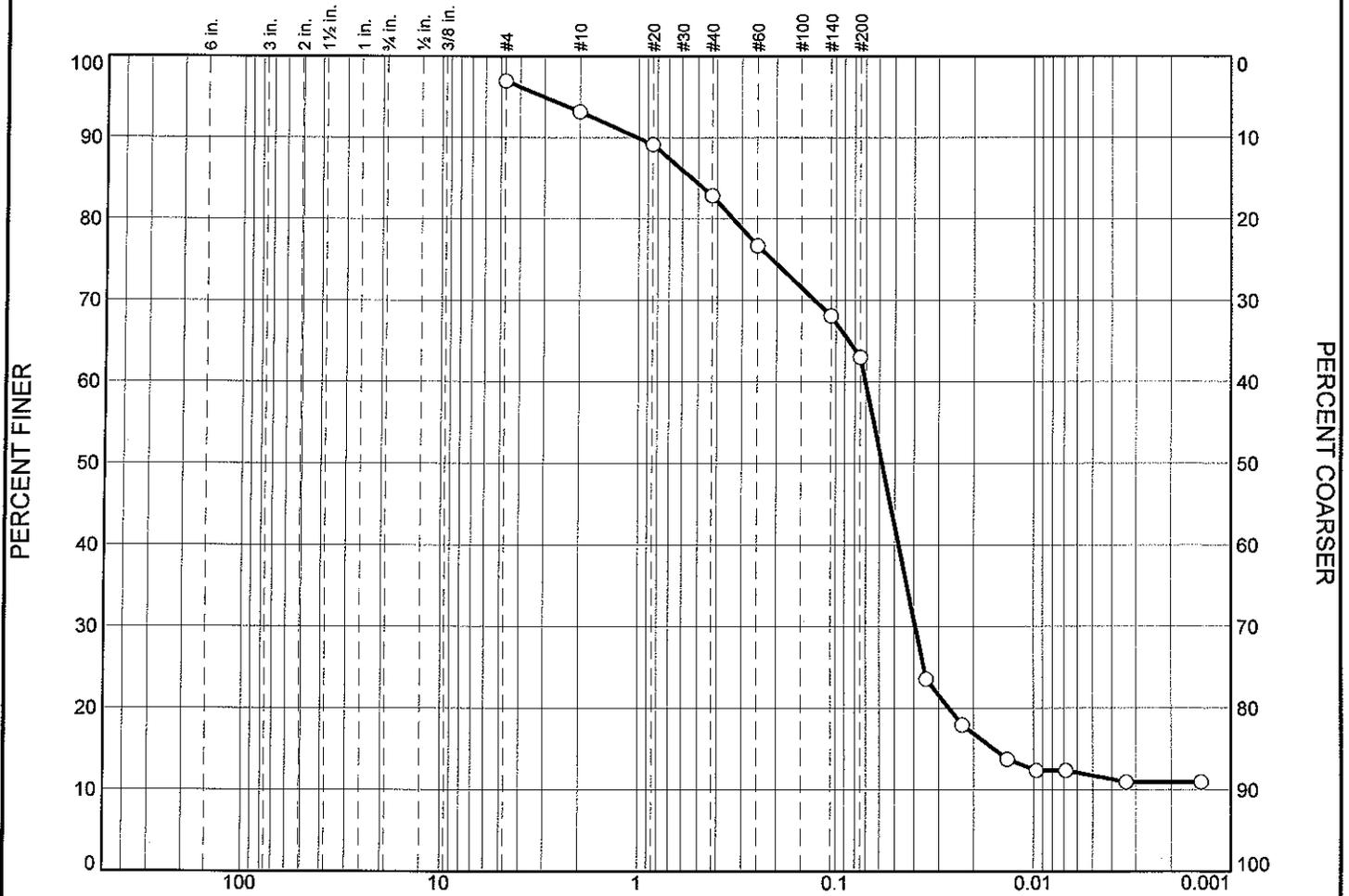
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 1.0     | 2.4  | 3.8  | 5.9  | 17.1    | 30.2  | 34.9 | 9.4  | 2.2  | 0.6     | 47.1  | 12.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0151          | 0.0244          | 0.0367          | 0.0526          | 0.0630          | 0.1844          | 0.3771          | 2.3728          |                 |

| Fineness Modulus |
|------------------|
| 0.81             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 3.0             | 3.3             | 5.6             | 7.6             | 7.0             | 16.0           | 31.7           | 7.1  | 2.6  | 1.1     | 11.2   |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.5380          | 0.0707          | 0.0581          | 0.0393          | 0.0159          |                 |                |                |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912919      <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506413      <b>Sample Number:</b> L0912919-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506413

Sample Number: L0912919-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 72.26                       | 0.00         | #4                 | 523.02                  | 520.81               | 96.9          | 3.1              |
|                             |              | #10                | 484.83                  | 482.11               | 93.2          | 6.8              |
|                             |              | #20                | 414.01                  | 411.09               | 89.1          | 10.9             |
|                             |              | #40                | 382.39                  | 377.86               | 82.9          | 17.1             |
|                             |              | #60                | 374.29                  | 369.84               | 76.7          | 23.3             |
|                             |              | #140               | 353.40                  | 347.17               | 68.1          | 31.9             |
|                             |              | #200               | 350.17                  | 346.51               | 63.0          | 37.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 63.0

Weight of hydrometer sample = 72.26

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0170         | 1.0168            | 0.0138 | 14.0 | 12.6       | 0.0347         | 23.5          | 76.5             |
| 5.00                | 19.0            | 1.0130         | 1.0128            | 0.0138 | 10.0 | 13.6       | 0.0228         | 17.9          | 82.1             |
| 15.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0136         | 13.7          | 86.3             |
| 30.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0097         | 12.3          | 87.7             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 12.3          | 87.7             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 10.9          | 89.1             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 10.9          | 89.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.0      | 3.3     | 5.6  | 7.6  | 7.0  | 16.0    | 39.5  | 31.7 | 7.1  | 2.6  | 1.1     | 42.5  | 11.2 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0159          | 0.0266          | 0.0393          | 0.0581          | 0.0707          | 0.3320          | 0.5380          | 1.0205          | 3.0403          |

| Fineness Modulus |
|------------------|
| 0.82             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: I0912919

Location: 506426

Sample Number: L0912919-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.52                       | 0.00         | #4                 | 521.86                  | 521.77               | 99.8          | 0.2              |
|                             |              | #10                | 485.29                  | 484.81               | 98.9          | 1.1              |
|                             |              | #20                | 405.95                  | 405.42               | 97.8          | 2.2              |
|                             |              | #40                | 362.50                  | 362.28               | 97.4          | 2.6              |
|                             |              | #60                | 367.85                  | 366.16               | 94.0          | 6.0              |
|                             |              | #140               | 346.40                  | 342.82               | 87.0          | 13.0             |
|                             |              | #200               | 347.90                  | 345.25               | 81.7          | 18.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 81.7

Weight of hydrometer sample = 50.52

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0160         | 1.0158            | 0.0138 | 13.0 | 12.9       | 0.0350         | 41.1          | 58.9             |
| 5.00                | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0231         | 30.7          | 69.3             |
| 15.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0136         | 25.5          | 74.5             |
| 30.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0097         | 22.9          | 77.1             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 22.9          | 77.1             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 20.3          | 79.7             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 20.3          | 79.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.7      | 0.9     | 0.5  | 3.5  | 5.7  | 16.3    | 26.9  | 34.0 | 11.2 | 3.9  | 2.1     | 51.2  | 20.8 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0215 | 0.0414 | 0.0499 | 0.0726 | 0.0932 | 0.1532 | 0.2910 |

| Fineness Modulus |
|------------------|
| 0.20             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 508236

Sample Number: L0912919-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.86                       | 0.00         | #4                 | 522.40                  | 520.81               | 96.9          | 3.1              |
|                             |              | #10                | 482.91                  | 482.11               | 95.3          | 4.7              |
|                             |              | #20                | 411.62                  | 411.09               | 94.3          | 5.7              |
|                             |              | #40                | 378.53                  | 377.86               | 92.9          | 7.1              |
|                             |              | #60                | 371.16                  | 369.84               | 90.3          | 9.7              |
|                             |              | #140               | 350.61                  | 342.17               | 73.8          | 26.2             |
|                             |              | #200               | 348.85                  | 346.51               | 69.2          | 30.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 69.2

Weight of hydrometer sample = 50.86

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0170         | 1.0168            | 0.0138 | 14.0 | 12.6       | 0.0347         | 36.7          | 63.3             |
| 5.00                | 19.0            | 1.0130         | 1.0128            | 0.0138 | 10.0 | 13.6       | 0.0228         | 28.0          | 72.0             |
| 15.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0136         | 21.4          | 78.6             |
| 30.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0097         | 19.2          | 80.8             |
| 60.00               | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0069         | 17.0          | 83.0             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 17.0          | 83.0             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 17.0          | 83.0             |

## Fractional Components

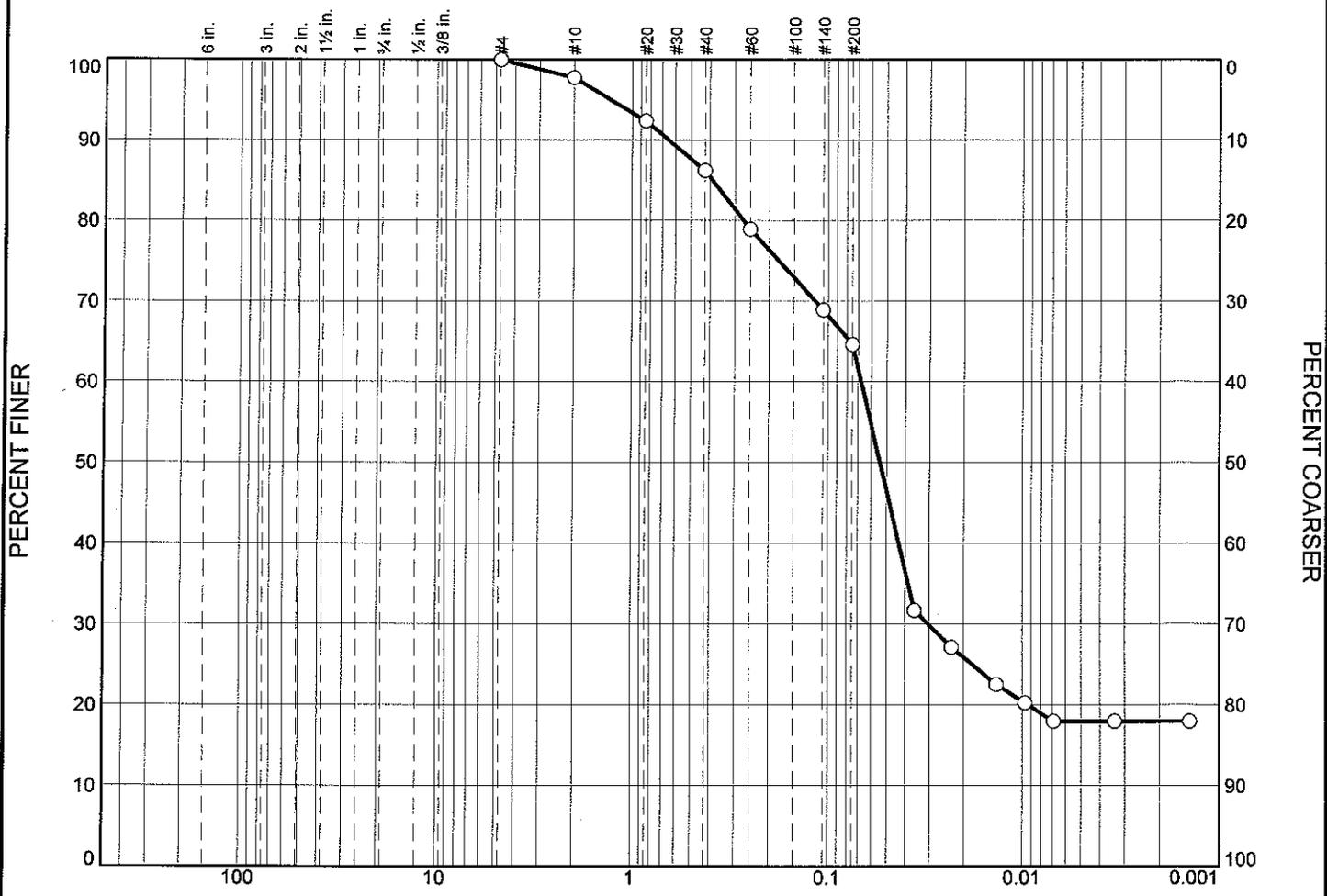
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.3      | 0.8     | 1.2  | 3.0  | 13.4 | 15.4    | 33.8  | 27.1 | 11.2 | 5.4  | 0.8     | 44.5  | 17.0 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0109 | 0.0252 | 0.0476 | 0.0603 | 0.1464 | 0.1896 | 0.2456 | 1.5623 |

| Fineness Modulus |
|------------------|
| 0.48             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders           | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |        | % Clay |         |
|---|----------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|--------|--------|---------|
|   |                      |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine   |        | V. Fine |
| ○ |                      |           |                 | 1.8             | 4.3             | 5.8             | 8.7             | 8.1             | 14.3           | 26.3           | 6.5  | 5.0    | 0.8    | 17.9    |
| ⊗ | LL                   | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |        |        |         |
| ○ |                      |           | 0.3895          | 0.0676          | 0.0540          | 0.0304          |                 |                 |                |                |      |        |        |         |
| ○ | Material Description |           |                 |                 |                 |                 |                 |                 |                |                | USCS | AASHTO |        |         |
| ○ |                      |           |                 |                 |                 |                 |                 |                 |                |                |      |        |        |         |

**Project No.** 10912919      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 506511      **Sample Number:** L0912919-06  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: I0912919

Location: 506511

Sample Number: L0912919-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.21                       | 0.00         | #4                 | 521.79                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.82                  | 484.81               | 97.7          | 2.3              |
|                             |              | #20                | 407.84                  | 405.42               | 92.4          | 7.6              |
|                             |              | #40                | 364.07                  | 361.28               | 86.2          | 13.8             |
|                             |              | #60                | 369.45                  | 366.16               | 78.9          | 21.1             |
|                             |              | #140               | 347.35                  | 342.82               | 68.9          | 31.1             |
|                             |              | #200               | 347.19                  | 345.25               | 64.6          | 35.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 64.6

Weight of hydrometer sample = 45.21

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0140         | 1.0138            | 0.0138 | 11.0 | 13.4       | 0.0357         | 31.7          | 68.3             |
| 5.00                | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0231         | 27.1          | 72.9             |
| 15.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0136         | 22.5          | 77.5             |
| 30.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0097         | 20.2          | 79.8             |
| 60.00               | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0069         | 17.9          | 82.1             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 17.9          | 82.1             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 17.9          | 82.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.8      | 4.3     | 5.8  | 8.7  | 8.1  | 14.3    | 41.2  | 26.3 | 6.5  | 5.0  | 0.8     | 38.6  | 17.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0094          | 0.0304          | 0.0540          | 0.0676          | 0.2705          | 0.3895          | 0.6514          | 1.2944          |

| Fineness Modulus |
|------------------|
| 0.64             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506512

Sample Number: L0912919-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.94                       | 0.00         | #4                 | 520.86                  | 520.81               | 99.9          | 0.1              |
|                             |              | #10                | 483.70                  | 482.11               | 97.1          | 2.9              |
|                             |              | #20                | 414.84                  | 411.09               | 90.4          | 9.6              |
|                             |              | #40                | 382.58                  | 377.86               | 81.9          | 18.1             |
|                             |              | #60                | 374.33                  | 369.84               | 73.9          | 26.1             |
|                             |              | #140               | 352.84                  | 347.17               | 63.8          | 36.2             |
|                             |              | #200               | 348.39                  | 346.51               | 60.4          | 39.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 60.4

Weight of hydrometer sample = 55.94

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0160         | 1.0158            | 0.0138 | 13.0 | 12.9       | 0.0350         | 27.4          | 72.6             |
| 5.00                | 19.0            | 1.0140         | 1.0138            | 0.0138 | 11.0 | 13.4       | 0.0226         | 23.9          | 76.1             |
| 15.00               | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0133         | 20.5          | 79.5             |
| 30.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0095         | 18.7          | 81.3             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 15.3          | 84.7             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 13.5          | 86.5             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 13.5          | 86.5             |

## Fractional Components

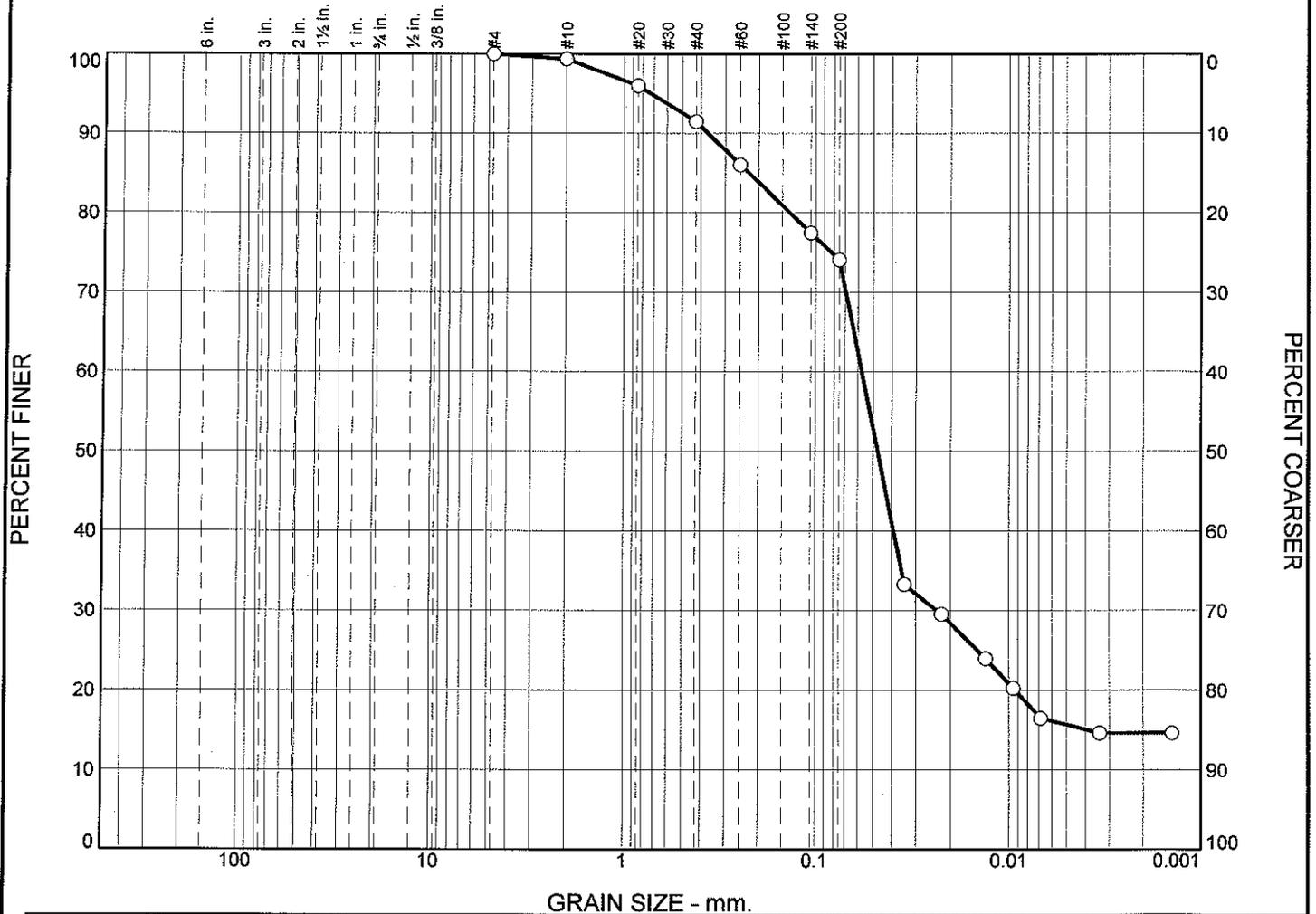
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.2      | 5.5     | 7.7  | 10.0 | 8.2  | 13.2    | 44.6  | 26.1 | 4.9  | 4.8  | 2.8     | 38.6  | 13.9 |

| D10 | D15    | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     | 0.0061 | 0.0121 | 0.0372 | 0.0590 | 0.0743 | 0.3742 | 0.5470 | 0.8249 | 1.5359 |

| Fineness Modulus |
|------------------|
| 0.79             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 0.5        | 2.8     | 4.0  | 6.6  | 6.9  | 14.5    | 32.2   | 6.6  | 7.8  | 3.0     | 15.0   |

| ☒ | LL | PL | D85    | D60    | D50    | D30    | D15    | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|--------|--------|-----|----|----|
| ○ |    |    | 0.2254 | 0.0572 | 0.0473 | 0.0234 | 0.0039 |     |    |    |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|  |  |
|--|--|
| <b>Project No.</b> 10912919 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 506513 <b>Sample Number:</b> L0912919-08 | <b>Remarks:</b><br><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: I0912919

Location: 506513

Sample Number: L0912919-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 63.66                       | 0.00         | #4                 | 521.78                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.21                  | 484.81               | 99.4          | 0.6              |
|                             |              | #20                | 407.55                  | 405.42               | 96.0          | 4.0              |
|                             |              | #40                | 364.15                  | 361.28               | 91.5          | 8.5              |
|                             |              | #60                | 369.64                  | 366.16               | 86.0          | 14.0             |
|                             |              | #140               | 348.29                  | 342.82               | 77.4          | 22.6             |
|                             |              | #200               | 347.38                  | 345.25               | 74.1          | 25.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 74.1

Weight of hydrometer sample = 63.66

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0180         | 1.0178            | 0.0138 | 15.0 | 12.3       | 0.0343         | 33.3          | 66.7             |
| 5.00                | 19.0            | 1.0160         | 1.0158            | 0.0138 | 13.0 | 12.9       | 0.0222         | 29.5          | 70.5             |
| 15.00               | 19.0            | 1.0130         | 1.0128            | 0.0138 | 10.0 | 13.6       | 0.0132         | 23.9          | 76.1             |
| 30.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0095         | 20.2          | 79.8             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 16.5          | 83.5             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 14.6          | 85.4             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 14.6          | 85.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.5      | 2.8     | 4.0  | 6.6  | 6.9  | 14.5    | 34.8  | 32.2 | 6.6  | 7.8  | 3.0     | 49.6  | 15.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0039          | 0.0093          | 0.0234          | 0.0473          | 0.0572          | 0.1368          | 0.2254          | 0.3674          | 0.7277          |

Fineness Modulus

0.41

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506526

Sample Number: L0912919-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 54.69                       | 0.00         | #4                 | 520.86                  | 520.81               | 99.9          | 0.1              |
|                             |              | #10                | 483.67                  | 482.11               | 97.1          | 2.9              |
|                             |              | #20                | 412.67                  | 411.09               | 94.2          | 5.8              |
|                             |              | #40                | 379.72                  | 377.86               | 90.8          | 9.2              |
|                             |              | #60                | 372.46                  | 369.84               | 86.0          | 14.0             |
|                             |              | #140               | 352.77                  | 347.17               | 75.7          | 24.3             |
|                             |              | #200               | 349.34                  | 346.51               | 70.6          | 29.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 70.6

Weight of hydrometer sample = 54.69

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0150         | 1.0148            | 0.0138 | 12.0 | 13.1       | 0.0354         | 30.7          | 69.3             |
| 5.00                | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0231         | 24.5          | 75.5             |
| 15.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0134         | 22.4          | 77.6             |
| 30.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0097         | 18.2          | 81.8             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 18.2          | 81.8             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 16.2          | 83.8             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 16.2          | 83.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.2      | 2.4     | 3.1  | 5.6  | 8.3  | 16.8    | 36.2  | 32.1 | 5.8  | 4.8  | 1.6     | 44.3  | 16.6 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0111          | 0.0338          | 0.0509          | 0.0615          | 0.1515          | 0.2304          | 0.3904          | 1.0878          |

| Fineness Modulus |
|------------------|
| 0.47             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506611

Sample Number: L0912919-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.49                       | 0.00         | #4                 | 523.76                  | 521.77               | 97.1          | 2.9              |
|                             |              | #10                | 486.76                  | 484.81               | 94.2          | 5.8              |
|                             |              | #20                | 409.53                  | 405.42               | 88.2          | 11.8             |
|                             |              | #40                | 368.66                  | 361.28               | 77.5          | 22.5             |
|                             |              | #60                | 376.26                  | 366.16               | 62.7          | 37.3             |
|                             |              | #140               | 353.10                  | 342.82               | 47.7          | 52.3             |
|                             |              | #200               | 347.83                  | 345.25               | 43.9          | 56.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 43.9

Weight of hydrometer sample = 68.49

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0150         | 1.0148            | 0.0138 | 12.0 | 13.1       | 0.0354         | 15.3          | 84.7             |
| 5.00                | 19.0            | 1.0130         | 1.0128            | 0.0138 | 10.0 | 13.6       | 0.0228         | 13.2          | 86.8             |
| 15.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0134         | 11.1          | 88.9             |
| 30.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0096         | 10.1          | 89.9             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 9.1           | 90.9             |
| 250.00              | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0034         | 9.1           | 90.9             |
| 1440.00             | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0014         | 9.1           | 90.9             |

## Fractional Components

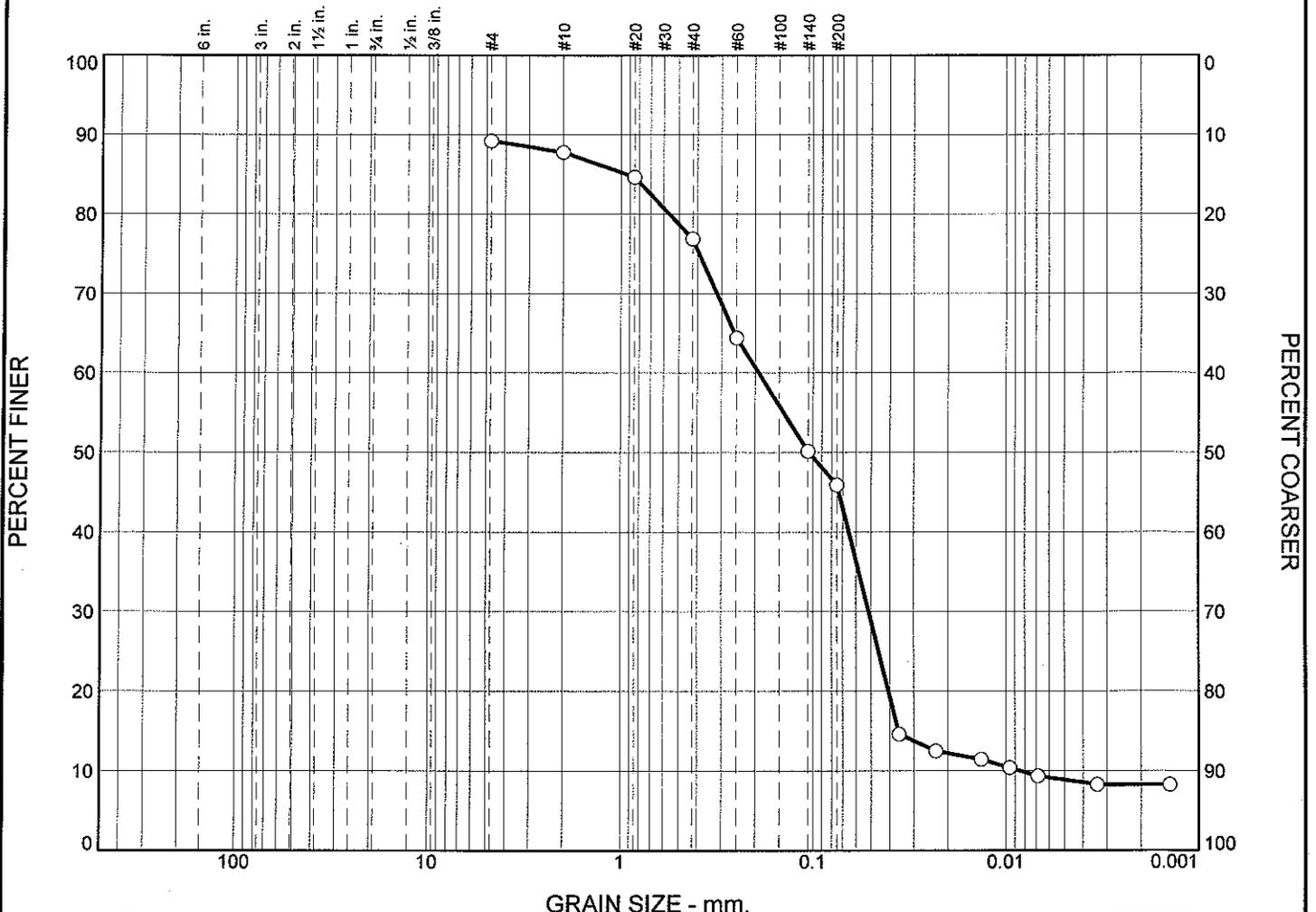
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.3      | 4.8     | 9.4  | 17.3 | 12.1 | 13.6    | 57.2  | 22.4 | 2.9  | 2.2  | 0.4     | 27.9  | 9.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0093          | 0.0335          | 0.0401          | 0.0521          | 0.1208          | 0.2139          | 0.5001          | 0.6898          | 1.0915          | 2.5139          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.13             | 23.09          | 1.37           |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles | % Sand     |         |      |      |      | % Silt  |      |      |      | % Clay |         |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|------|------|------|--------|---------|
|   |            |           |           | % Granules | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○ |            |           |           | 1.1        | 2.6     | 6.5  | 14.3 | 11.5 | 14.7    | 24.3 | 2.2  | 2.0  | 1.2    | 8.5     |

| X | LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu    |
|---|----|----|--------|--------|--------|--------|--------|--------|------|-------|
| ○ |    |    | 0.9336 | 0.1918 | 0.1048 | 0.0515 | 0.0361 | 0.0085 | 1.62 | 22.55 |

| ○ | Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|---|----------------------|--|--|--|--|--|--|--|------|--------|
|   |                      |  |  |  |  |  |  |  |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912919      <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506612      <b>Sample Number:</b> L0912919-11</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |
| <p><b>Figure</b></p>  |                        |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506612

Sample Number: L0912919-11

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.68                       | 0.00         | #4                 | 528.32                  | 520.81               | 89.2          | 10.8             |
|                             |              | #10                | 483.12                  | 482.11               | 87.8          | 12.2             |
|                             |              | #20                | 413.26                  | 411.09               | 84.7          | 15.3             |
|                             |              | #40                | 383.29                  | 377.86               | 76.9          | 23.1             |
|                             |              | #60                | 378.52                  | 369.84               | 64.4          | 35.6             |
|                             |              | #140               | 357.11                  | 347.17               | 50.1          | 49.9             |
|                             |              | #200               | 349.46                  | 346.51               | 45.9          | 54.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 45.9

Weight of hydrometer sample = 69.68

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0140         | 1.0138            | 0.0138 | 11.0 | 13.4       | 0.0357         | 14.6          | 85.4             |
| 5.00                | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0231         | 12.5          | 87.5             |
| 15.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0134         | 11.4          | 88.6             |
| 30.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0096         | 10.4          | 89.6             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 9.3           | 90.7             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 8.3           | 91.7             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 8.3           | 91.7             |

## Fractional Components

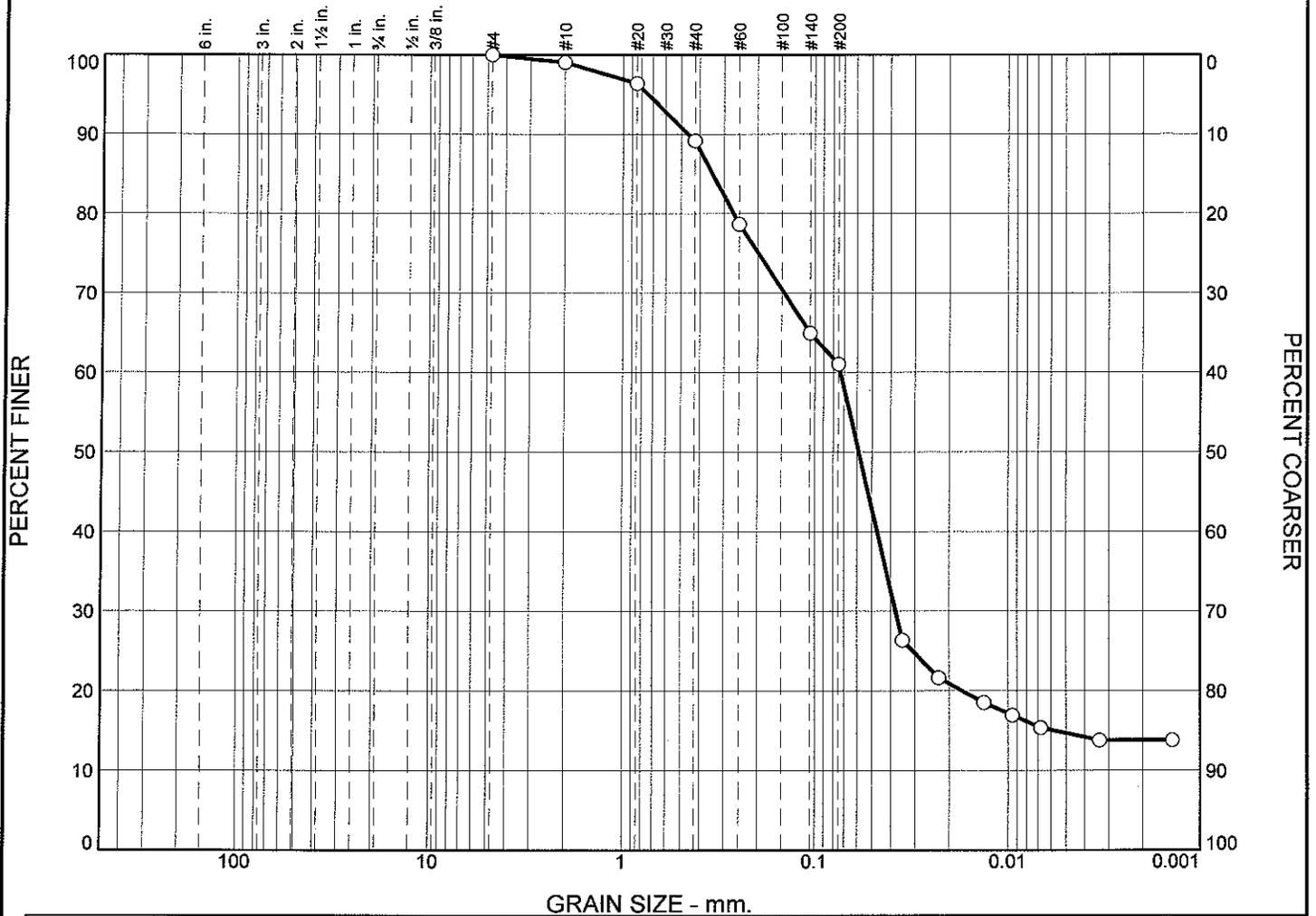
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.1      | 2.6     | 6.5  | 14.3 | 11.5 | 14.7    | 49.6  | 24.3 | 2.2  | 2.0  | 1.2     | 29.7  | 8.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0085          | 0.0361          | 0.0406          | 0.0515          | 0.1048          | 0.1918          | 0.5617          | 0.9336          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.32             | 22.55          | 1.62           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 0.8             | 2.1             | 6.0             | 12.2            | 11.1            | 14.8           | 27.7           | 5.7  | 3.4  | 1.9     | 14.1   |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.3444          | 0.0733          | 0.0587          | 0.0376          | 0.0058          |                 |                |                |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912919      <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506613      <b>Sample Number:</b> L0912919-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506613

Sample Number: L0912919-12

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.55                       | 0.00         | #4                 | 521.78                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.40                  | 484.81               | 99.0          | 1.0              |
|                             |              | #20                | 407.07                  | 405.42               | 96.4          | 3.6              |
|                             |              | #40                | 365.81                  | 361.28               | 89.2          | 10.8             |
|                             |              | #60                | 372.73                  | 366.16               | 78.7          | 21.3             |
|                             |              | #140               | 351.39                  | 342.82               | 65.0          | 35.0             |
|                             |              | #200               | 347.71                  | 345.25               | 61.0          | 39.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 61.0

Weight of hydrometer sample = 62.55

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0170         | 1.0168            | 0.0138 | 14.0 | 12.6       | 0.0347         | 26.3          | 73.7             |
| 5.00                | 19.0            | 1.0140         | 1.0138            | 0.0138 | 11.0 | 13.4       | 0.0226         | 21.6          | 78.4             |
| 15.00               | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0133         | 18.5          | 81.5             |
| 30.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0095         | 16.9          | 83.1             |
| 60.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0068         | 15.4          | 84.6             |
| 250.00              | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0034         | 13.8          | 86.2             |
| 1440.00             | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0014         | 13.8          | 86.2             |

## Fractional Components

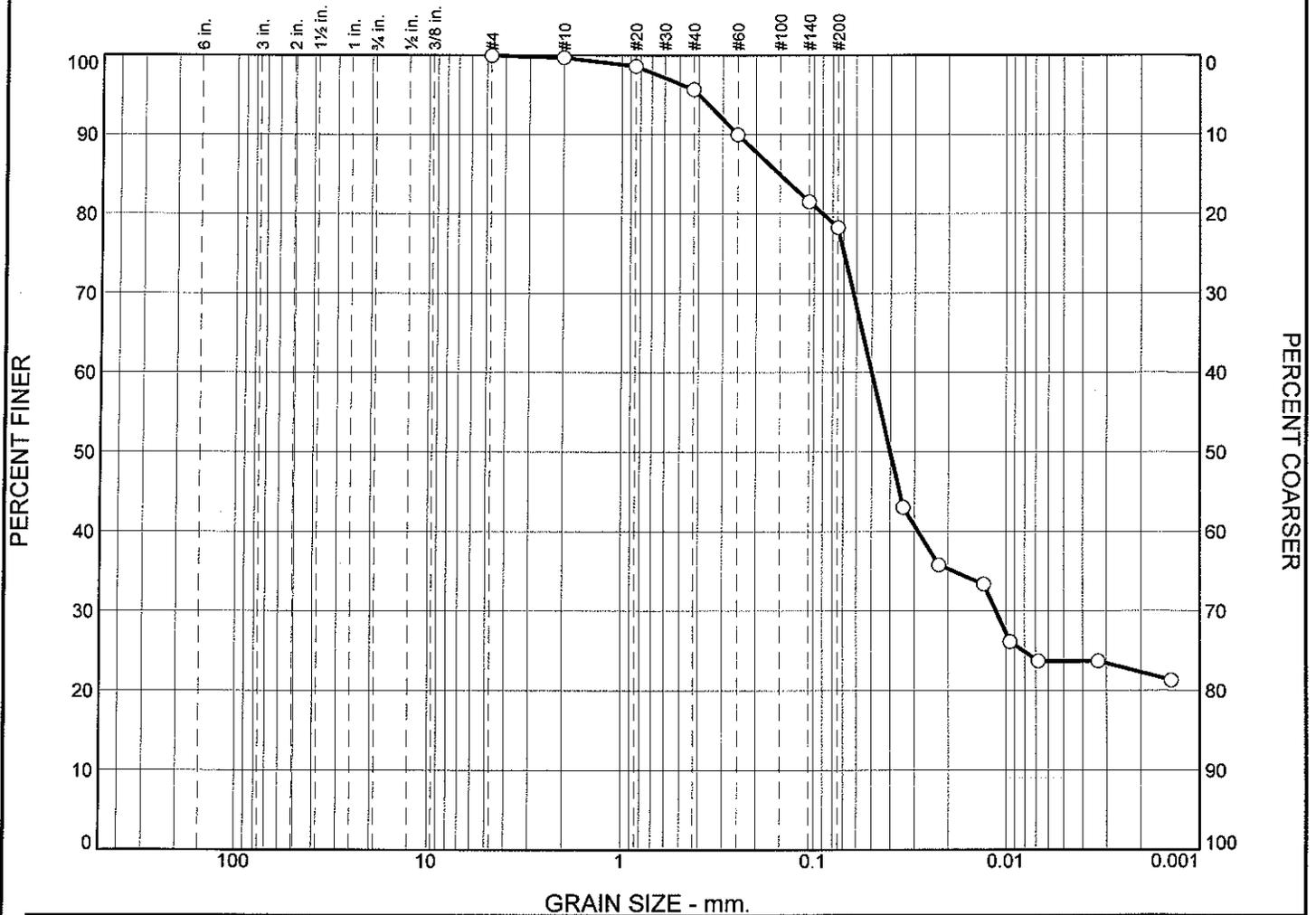
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 2.1     | 6.0  | 12.2 | 11.1 | 14.8    | 46.2  | 27.7 | 5.7  | 3.4  | 1.9     | 38.7  | 14.1 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0058          | 0.0172          | 0.0376          | 0.0587          | 0.0733          | 0.2675          | 0.3444          | 0.4605          | 0.7432          |

| Fineness Modulus |
|------------------|
| 0.58             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                             | % Boulders | % Cobbles | % Pebbles | % Gravel | % Sand  |        |      |      |         | % Silt      |               |      |         | % Clay |
|-----------------------------|------------|-----------|-----------|----------|---------|--------|------|------|---------|-------------|---------------|------|---------|--------|
|                             |            |           |           |          | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.        | Med.          | Fine | V. Fine |        |
| ○                           |            |           |           | 0.2      | 0.9     | 2.4    | 6.4  | 6.8  | 13.2    | 28.7        | 7.1           | 9.5  | 1.0     | 23.7   |
| ⊗                           | LL         | PL        | D85       | D60      | D50     | D30    | D15  | D10  | Cc      | Cu          |               |      |         |        |
| ○                           |            |           | 0.1509    | 0.0500   | 0.0400  | 0.0113 |      |      |         |             |               |      |         |        |
| <b>Material Description</b> |            |           |           |          |         |        |      |      |         | <b>USCS</b> | <b>AASHTO</b> |      |         |        |
| ○                           |            |           |           |          |         |        |      |      |         |             |               |      |         |        |

**Project No.** I0912919      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 506626      **Sample Number:** L0912919-13

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**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506626

Sample Number: L0912919-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 51.99                       | 0.00         | #4                 | 520.83                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.25                  | 482.11               | 99.7          | 0.3              |
|                             |              | #20                | 411.66                  | 411.09               | 98.6          | 1.4              |
|                             |              | #40                | 379.38                  | 377.86               | 95.7          | 4.3              |
|                             |              | #60                | 372.81                  | 369.84               | 90.0          | 10.0             |
|                             |              | #140               | 351.55                  | 347.17               | 81.5          | 18.5             |
|                             |              | #200               | 348.22                  | 346.51               | 78.2          | 21.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 78.2

Weight of hydrometer sample = 51.99

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0180         | 1.0178            | 0.0138 | 15.0 | 12.3       | 0.0343         | 43.0          | 57.0             |
| 5.00                | 19.0            | 1.0150         | 1.0148            | 0.0138 | 12.0 | 13.1       | 0.0224         | 35.8          | 64.2             |
| 15.00               | 19.0            | 1.0140         | 1.0138            | 0.0138 | 11.0 | 13.4       | 0.0131         | 33.4          | 66.6             |
| 30.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0095         | 26.1          | 73.9             |
| 60.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0068         | 23.7          | 76.3             |
| 250.00              | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0033         | 23.7          | 76.3             |
| 1440.00             | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0014         | 21.3          | 78.7             |

## Fractional Components

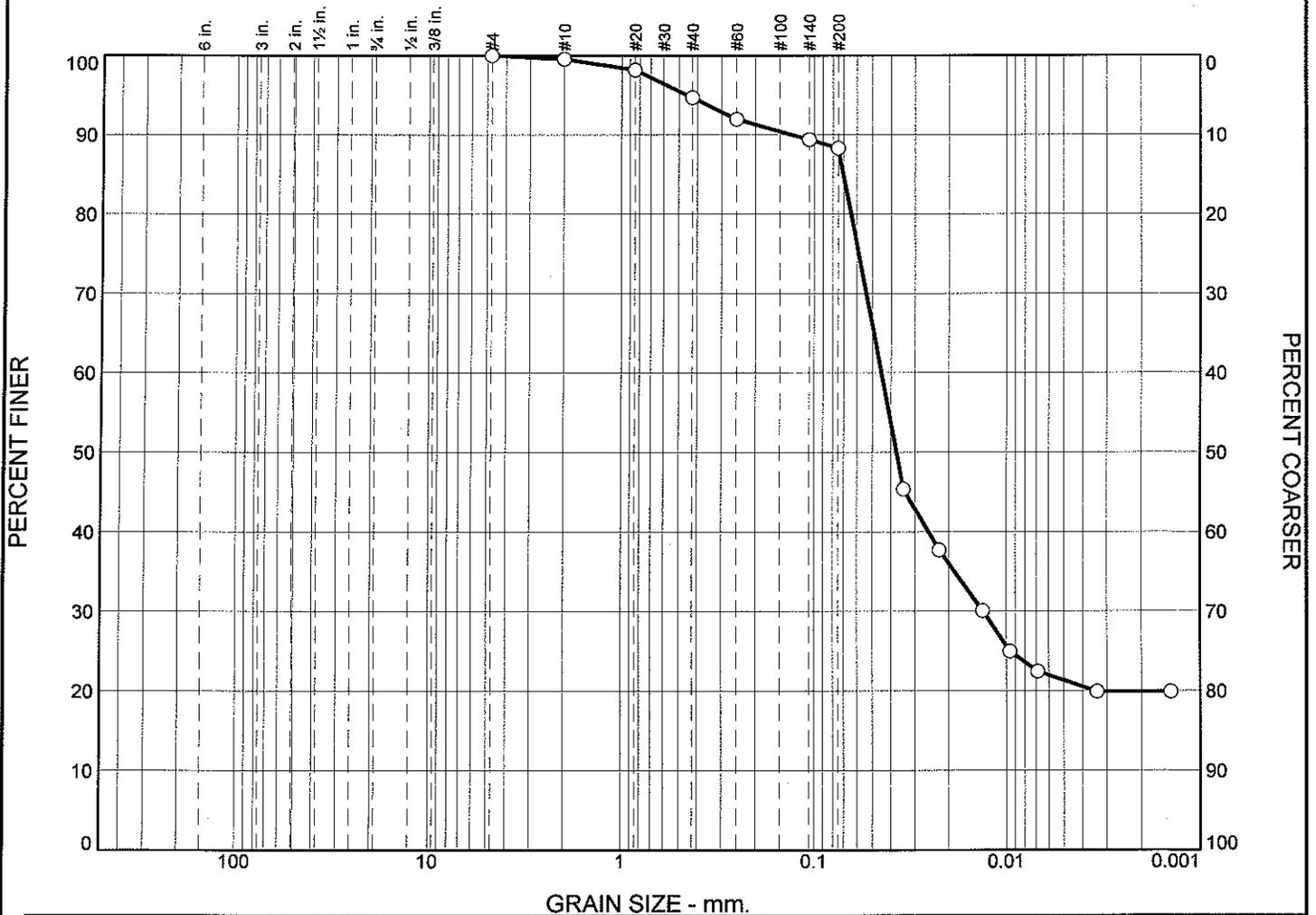
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         | Clay |       |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|------|-------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine |      | Total |
|          |         |         | 0.2      | 0.9     | 2.4  | 6.4  | 6.8  | 13.2    | 29.7  | 28.7 | 7.1  | 9.5  | 1.0     | 46.3 | 23.7  |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0113 | 0.0400 | 0.0500 | 0.0902 | 0.1509 | 0.2509 | 0.3993 |

| Fineness Modulus |
|------------------|
| 0.27             |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.1       | 0.4        | 1.1     | 2.9    | 3.5  | 2.1  | 11.6    | 34.8   | 11.1 | 9.0  | 3.0     | 20.4   |
| × | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.0706    | 0.0448     | 0.0373  | 0.0132 |      |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |  |
|--|--|
| <b>Project No.</b> 10912919 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 506711 <b>Sample Number:</b> L0912919-14 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** 10912919  
**Location:** 506711  
**Sample Number:** L0912919-14  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.68                       | 0.00         | #4                 | 521.77                  | 521.77               | 100.0         | 0.0              |
|                             |              | #10                | 485.07                  | 484.81               | 99.5          | 0.5              |
|                             |              | #20                | 406.17                  | 405.42               | 98.2          | 1.8              |
|                             |              | #40                | 363.23                  | 361.28               | 94.7          | 5.3              |
|                             |              | #60                | 367.68                  | 366.16               | 92.0          | 8.0              |
|                             |              | #140               | 344.25                  | 342.82               | 89.4          | 10.6             |
|                             |              | #200               | 345.85                  | 345.25               | 88.3          | 11.7             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 88.3  
 Weight of hydrometer sample = 55.68  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0180         | 1.0178            | 0.0138 | 15.0 | 12.3       | 0.0343         | 45.4          | 54.6             |
| 5.00                | 19.0            | 1.0150         | 1.0148            | 0.0138 | 12.0 | 13.1       | 0.0224         | 37.7          | 62.3             |
| 15.00               | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0133         | 30.1          | 69.9             |
| 30.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0096         | 25.0          | 75.0             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 22.4          | 77.6             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 19.9          | 80.1             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 19.9          | 80.1             |

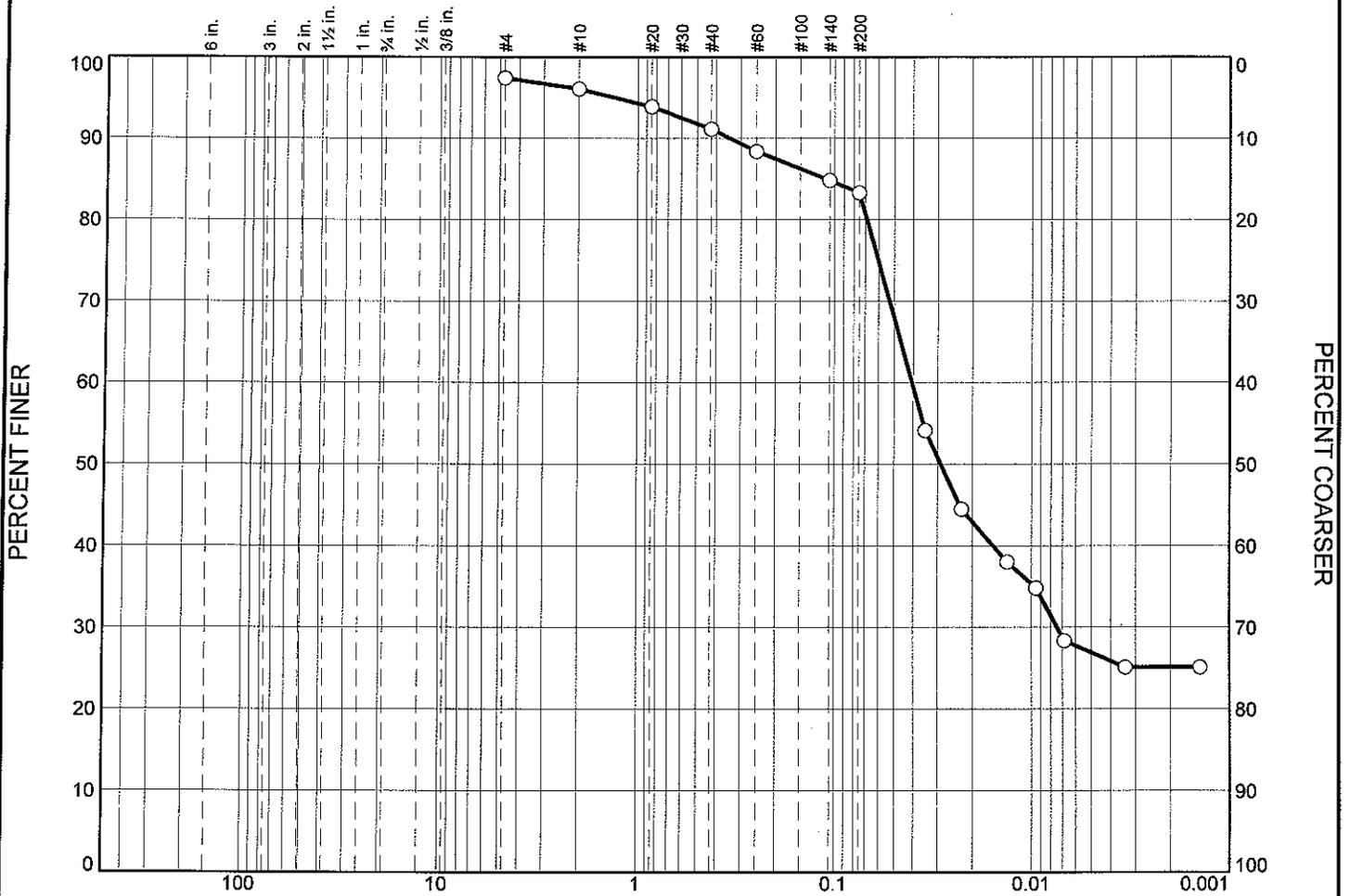
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.4      | 1.1     | 2.9  | 3.5  | 2.1  | 11.6    | 21.2  | 34.8 | 11.1 | 9.0  | 3.0     | 57.9  | 20.4 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0035 | 0.0132 | 0.0373 | 0.0448 | 0.0645 | 0.0706 | 0.1301 | 0.4524 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.22                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 1.0             | 1.8             | 2.5             | 3.4             | 2.9             | 9.1            | 24.8           | 11.7 | 9.0  | 5.1     | 25.8   |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.1108          | 0.0405          | 0.0289          | 0.0074          |                 |                 |                |                |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> 10912919      <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506712      <b>Sample Number:</b> L0912919-15</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506712

Sample Number: L0912919-15

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 41.56                       | 0.00         | #4                 | 521.89                  | 520.81               | 97.4          | 2.6              |
|                             |              | #10                | 482.66                  | 482.11               | 96.1          | 3.9              |
|                             |              | #20                | 412.00                  | 411.09               | 93.9          | 6.1              |
|                             |              | #40                | 379.00                  | 377.86               | 91.1          | 8.9              |
|                             |              | #60                | 370.99                  | 369.84               | 88.4          | 11.6             |
|                             |              | #140               | 348.65                  | 347.17               | 84.8          | 15.2             |
|                             |              | #200               | 347.14                  | 346.51               | 83.3          | 16.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 83.3

Weight of hydrometer sample = 41.56

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0170         | 1.0168            | 0.0138 | 14.0 | 12.6       | 0.0347         | 54.1          | 45.9             |
| 5.00                | 19.0            | 1.0140         | 1.0138            | 0.0138 | 11.0 | 13.4       | 0.0226         | 44.4          | 55.6             |
| 15.00               | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0133         | 38.0          | 62.0             |
| 30.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0095         | 34.8          | 65.2             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 28.3          | 71.7             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 25.1          | 74.9             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 25.1          | 74.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.0      | 1.8     | 2.5  | 3.4  | 2.9  | 9.1     | 19.7  | 24.8 | 11.7 | 9.0  | 5.1     | 50.6  | 25.8 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0074          | 0.0289          | 0.0405          | 0.0687          | 0.1108          | 0.3412          | 1.3125          |

| Fineness Modulus |
|------------------|
| 0.43             |

Alpha Analytical



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** 10912919  
**Location:** 506713  
**Sample Number:** L0912919-16  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 40.53                       | 0.00         | #4                 | 521.80                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 484.87                  | 484.81               | 99.8          | 0.2              |
|                             |              | #20                | 405.60                  | 405.42               | 99.3          | 0.7              |
|                             |              | #40                | 362.32                  | 361.28               | 96.8          | 3.2              |
|                             |              | #60                | 367.29                  | 366.16               | 94.0          | 6.0              |
|                             |              | #140               | 343.89                  | 342.82               | 91.3          | 8.7              |
|                             |              | #200               | 345.73                  | 345.25               | 90.2          | 9.8              |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 90.2  
 Weight of hydrometer sample = 40.53  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0160         | 1.0158            | 0.0138 | 13.0 | 12.9       | 0.0350         | 56.5          | 43.5             |
| 5.00                | 19.0            | 1.0140         | 1.0138            | 0.0138 | 11.0 | 13.4       | 0.0226         | 49.3          | 50.7             |
| 15.00               | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0133         | 42.2          | 57.8             |
| 30.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0096         | 35.0          | 65.0             |
| 60.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0068         | 31.5          | 68.5             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 27.9          | 72.1             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 27.9          | 72.1             |

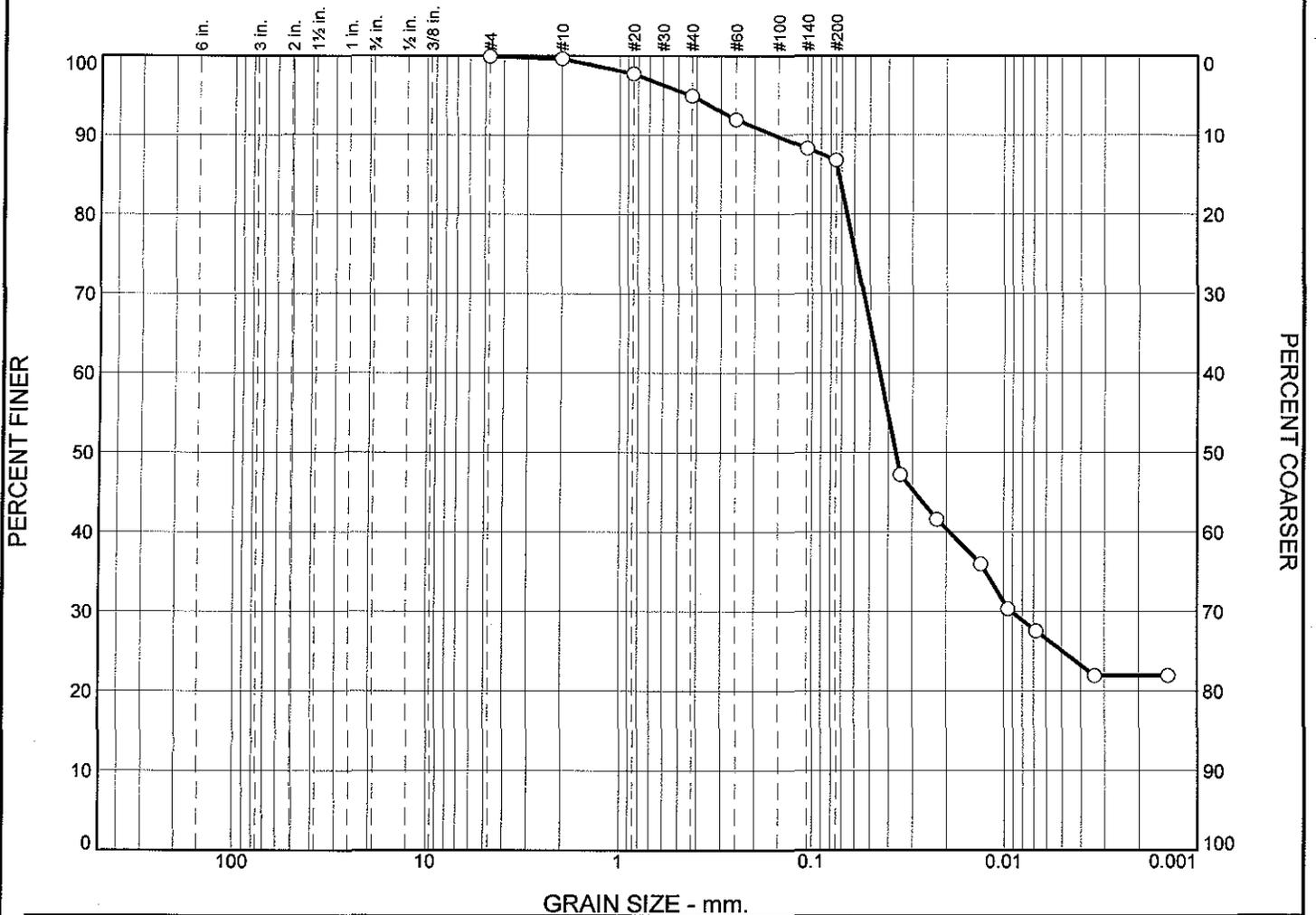
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.1      | 0.4     | 2.0  | 3.4  | 2.2  | 9.7     | 17.7  | 27.6 | 10.2 | 11.5 | 4.2     | 53.5  | 28.6 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0051          | 0.0236          | 0.0379          | 0.0596          | 0.0668          | 0.0747          | 0.3036          |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.15                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders           | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |        |      | % Clay |         |
|---|----------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|--------|---------|
|   |                      |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med.   | Fine |        | V. Fine |
| ○ |                      |           |                 | 0.3             | 1.5             | 2.5             | 3.6             | 3.0             | 11.6           | 31.6           | 8.0    | 9.1  | 5.6    | 23.1    |
| × | LL                   | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |      |        |         |
| ○ |                      |           | 0.0724          | 0.0445          | 0.0366          | 0.0091          |                 |                 |                |                |        |      |        |         |
| ○ | Material Description |           |                 |                 |                 |                 |                 |                 |                | USCS           | AASHTO |      |        |         |

**Project No.** 10912919      **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 ○ **Source of Sample:** 506726      **Sample Number:** L0912919-17  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506726

Sample Number: L0912919-17

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 49.63                       | 0.00         | #4                 | 520.85                  | 520.81               | 99.9          | 0.1              |
|                             |              | #10                | 482.26                  | 482.11               | 99.6          | 0.4              |
|                             |              | #20                | 412.03                  | 411.09               | 97.7          | 2.3              |
|                             |              | #40                | 379.24                  | 377.86               | 94.9          | 5.1              |
|                             |              | #60                | 371.32                  | 369.84               | 92.0          | 8.0              |
|                             |              | #140               | 348.98                  | 347.17               | 88.3          | 11.7             |
|                             |              | #200               | 347.26                  | 346.51               | 86.8          | 13.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 86.8

Weight of hydrometer sample = 49.63

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0170         | 1.0168            | 0.0138 | 14.0 | 12.6       | 0.0347         | 47.2          | 52.8             |
| 5.00                | 19.0            | 1.0150         | 1.0148            | 0.0138 | 12.0 | 13.1       | 0.0224         | 41.6          | 58.4             |
| 15.00               | 19.0            | 1.0130         | 1.0128            | 0.0138 | 10.0 | 13.6       | 0.0132         | 36.0          | 64.0             |
| 30.00               | 19.0            | 1.0110         | 1.0108            | 0.0138 | 8.0  | 14.2       | 0.0095         | 30.4          | 69.6             |
| 60.00               | 19.0            | 1.0100         | 1.0098            | 0.0138 | 7.0  | 14.4       | 0.0068         | 27.5          | 72.5             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 21.9          | 78.1             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 21.9          | 78.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 1.5     | 2.5  | 3.6  | 3.0  | 11.6    | 22.2  | 31.6 | 8.0  | 9.1  | 5.6     | 54.3  | 23.1 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0091 | 0.0366 | 0.0445 | 0.0657 | 0.0724 | 0.1576 | 0.4311 |

| Fineness Modulus |
|------------------|
| 0.23             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: 10912919

Location: 506726

Sample Number: WG384170-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 58.23                       | 0.00         | #4                 | 521.81                  | 521.77               | 99.9          | 0.1              |
|                             |              | #10                | 485.47                  | 484.81               | 98.8          | 1.2              |
|                             |              | #20                | 406.57                  | 405.42               | 96.8          | 3.2              |
|                             |              | #40                | 362.66                  | 361.28               | 94.5          | 5.5              |
|                             |              | #60                | 367.91                  | 366.16               | 91.4          | 8.6              |
|                             |              | #140               | 344.74                  | 342.82               | 88.2          | 11.8             |
|                             |              | #200               | 345.96                  | 345.25               | 86.9          | 13.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 86.9

Weight of hydrometer sample = 69.86

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 19.0            | 1.0170         | 1.0168            | 0.0138 | 14.0 | 12.6       | 0.0347         | 33.6          | 66.4             |
| 5.00                | 19.0            | 1.0120         | 1.0118            | 0.0138 | 9.0  | 13.9       | 0.0231         | 23.6          | 76.4             |
| 15.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0137         | 17.6          | 82.4             |
| 30.00               | 19.0            | 1.0090         | 1.0088            | 0.0138 | 6.0  | 14.7       | 0.0097         | 17.6          | 82.4             |
| 60.00               | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0069         | 15.6          | 84.4             |
| 250.00              | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0034         | 15.6          | 84.4             |
| 1440.00             | 19.0            | 1.0080         | 1.0078            | 0.0138 | 5.0  | 15.0       | 0.0014         | 15.6          | 84.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 1.6     | 2.2  | 3.6  | 2.6  | 14.5    | 24.5  | 43.5 | 11.7 | 2.8  | 0.7     | 58.7  | 15.6 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0169          | 0.0299          | 0.0440          | 0.0508          | 0.0678          | 0.0729          | 0.1715          | 0.4987          |

| Fineness Modulus |
|------------------|
| 0.26             |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. *NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. *NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. *NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A, 3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D, 9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.



Station 324

# CHAIN OF CUSTODY

PAGE 28 OF 41



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912919

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 6                              | 506511    | 9/26/09    | 12:05 | SE            | JB                 |
| 7                              | 506512    | 9/26/09    | 12:20 | SE            | JB                 |
| 8                              | 506513    | 9/26/09    | 12:27 | SE            | JB                 |
|                                | 506525    | 9/26/09    | 12:12 | SE            | JB                 |
| 9                              | 506526    | 9/26/09    | 12:12 | SE            | JB                 |
|                                | 506527    | 9/26/09    | 12:12 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                     |               |                     |               |
|---------------------|---------------|---------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
| <i>James Boych</i>  | 9/26/09 19:12 | <i>Fallon McCar</i> | 9/26/09 19:17 |
| <i>Fallon McCar</i> | 9/28/09 09:13 | <i>P. Gilbert</i>   | 9/28/09 9:15  |
| <i>P. Gilbert</i>   | 9/28/09 10:20 | <i>Alvarez</i>      | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

# CHAIN OF CUSTODY



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:  
Level III data report and project specific EDD

## Turn-Around Time

Date Rec'd in Lab: ALPHA Job #: LO912919

**Report Information Data Deliverables** **Billing Information**

FAX  EMAIL  Same as Client info PO #:

ADEx  Add'l Deliverables

**Regulatory Requirements/Report Limits**

State/Fed Program Criteria

fed

| ANALYSIS                    |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br>Preservation<br><input type="checkbox"/> Lab to do<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |   |
|-----------------------------|-----|------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------|---|
| total PCB congeners NOAA 18 | TOC | grain size | archive |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  | ben gs          | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  | ben gs          | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  | ben gs          | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  | sed chem        | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  | sed gs          | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  | sed arch        | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |   |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 10                             | 506611    | 9/26/09    | 08:50 | SE            | JB                 |
| 11                             | 506612    | 9/26/09    | 11:10 | SE            | JB                 |
| 12                             | 506613    | 9/26/09    | 11:15 | SE            | JB                 |
|                                | 506625    | 9/26/09    | 09:15 | SE            | JB                 |
| 13                             | 506626    | 9/26/09    | 09:15 | SE            | JB                 |
|                                | 506627    | 9/26/09    | 09:15 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - |

|                       |               |                       |               |
|-----------------------|---------------|-----------------------|---------------|
| Relinquished By:      | Date/Time     | Received By:          | Date/Time     |
| <i>James Bajek</i>    | 9/26/09 19:12 | <i>Kevin Sullivan</i> | 9/26/09 19:17 |
| <i>Kevin Sullivan</i> | 9/28/09 09:13 | <i>P. DeBorst</i>     | 9/28/09 9:25  |
| <i>P. DeBorst</i>     | 9/28/09 10:22 | <i>Alanna J.</i>      | 9/28/09 10:20 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912920  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/05/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

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320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912920-01                | 506811           | NEW BEDFORD, MA            | 09/24/09 14:02                  |
| L0912920-02                | 506812           | NEW BEDFORD, MA            | 09/24/09 15:28                  |
| L0912920-03                | 506813           | NEW BEDFORD, MA            | 09/24/09 15:32                  |
| L0912920-04                | 506826           | NEW BEDFORD, MA            | 09/24/09 15:12                  |
| L0912920-05                | 506911           | NEW BEDFORD, MA            | 09/24/09 13:38                  |
| L0912920-06                | 506912           | NEW BEDFORD, MA            | 09/24/09 14:00                  |
| L0912920-07                | 506913           | NEW BEDFORD, MA            | 09/24/09 14:15                  |
| L0912920-08                | 506926           | NEW BEDFORD, MA            | 09/24/09 13:50                  |
| L0912920-09                | 507011           | NEW BEDFORD, MA            | 09/24/09 12:11                  |
| L0912920-10                | 507012           | NEW BEDFORD, MA            | 09/24/09 12:20                  |
| L0912920-11                | 507013           | NEW BEDFORD, MA            | 09/24/09 11:35                  |
| L0912920-12                | 507026           | NEW BEDFORD, MA            | 09/24/09 11:45                  |
| L0912920-13                | 507111           | NEW BEDFORD, MA            | 09/24/09 09:06                  |
| L0912920-14                | 507112           | NEW BEDFORD, MA            | 09/24/09 09:30                  |
| L0912920-15                | 507113           | NEW BEDFORD, MA            | 09/24/09 10:40                  |
| L0912920-16                | 507126           | NEW BEDFORD, MA            | 09/24/09 09:15                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 20, 2009. The report was ammended to include revised Grain Size data.

### Grain Size

The WG382312-1 Laboratory Duplicate RPD is outside the acceptance criteria for Gravel (67%), % Very Coarse Sand (62%), % Coarse Sand (24%), % Medium sand (31%), % Fine Sand (32%), Clay (21%). The

**Project Name:** NBH LONG TERM MONITORING  
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**Lab Number:** L0912920  
**Report Date:** 02/05/10

**Case Narrative (continued)**

elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/05/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-01  
**Client ID:** 506811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 14:02  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 13.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 37.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-02  
**Client ID:** 506812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 15:28  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.700  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 30.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 15.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-03  
**Client ID:** 506813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 15:32  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 34.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 20.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 14.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-04  
**Client ID:** 506826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 15:12  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 10.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 35.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 23.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 10.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-05  
**Client ID:** 506911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 13:38  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 13.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 8.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 4.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 29.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-06  
**Client ID:** 506912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 14:00  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 14.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 10.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 7.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 8.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 22.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-07  
**Client ID:** 506913  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 14:15  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 7.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.900  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 32.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-08  
**Client ID:** 506926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 13:50  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 3.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 27.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-09  
**Client ID:** 507011  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 12:11  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 4.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 36.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-10  
**Client ID:** 507012  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 12:20  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 40.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 12.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-11  
**Client ID:** 507013  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 11:35  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 3.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 42.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 14.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-12  
**Client ID:** 507026  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 11:45  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.800  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 18.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 55.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 15.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-13  
**Client ID:** 507111  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 09:06  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 21.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 26.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-14  
**Client ID:** 507112  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 09:30  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 9.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 25.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 24.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 5.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-15  
**Client ID:** 507113  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 10:40  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 11.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 20.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 10.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 9.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### SAMPLE RESULTS

**Lab ID:** L0912920-16  
**Client ID:** 507126  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/24/09 09:15  
**Date Received:** 09/25/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 8.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 7.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 31.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912920

**Report Date:** 02/05/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-16 QC Batch ID: WG382312-1 QC Sample: L0912920-16 Client ID: 507126 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 8.4           | 4.20             | %     | 67  | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 7.0           | 3.70             | %     | 62  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 6.5           | 5.10             | %     | 24  | Q    | 20         |
| Medium Sand (0.25-0.50 mm)   | 10.4          | 7.60             | %     | 31  | Q    | 20         |
| Fine Sand (0.125-0.25 mm)  | 2.9           | 2.10             | %     | 32  | Q    | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 9.8           | 10.7             | %     | 9   |      | 20         |
| Silt - (1.95-62.5 um)  | 31.1          | 32.3             | %     | 4   |      | 20         |
| Clay - (<1.95 um)  | 8.8           | 10.9             | %     | 21  | Q    | 20         |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### Sample Receipt and Container Information

Were project specific reporting limits specified? YES

#### Cooler Information

|               |                     |
|---------------|---------------------|
| <b>Cooler</b> | <b>Custody Seal</b> |
| A             | Absent              |

#### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis  |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912920-01A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-02A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(),A2-HYDRO-VFSAND(W)(),A2-HYDRO-SILT(W)(),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(),A2-HYDRO-GRAVEL(W)(),A2-HYDRO-MSAND(W)(),A2-HYDRO-VCSAND(W)(),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis  |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912920-03A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(W)(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-04A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(W)(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-05A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(W)(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis  |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912920-06A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-07A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-08A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912920

Report Date: 02/05/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis  |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912920-09A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(W)(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-10A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(W)(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-11A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(W)(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis  |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912920-12A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-13A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-14A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912920

Report Date: 02/05/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis  |
|--------------|-------------------------|--------|-----|------------|------|--------|---|
| L0912920-15A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-16A | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(W)(7),A2-SIEVE_#200(W)(7),A2-SIEVE_#10(W)(7),A2-HYDRO-CLAY(W)(7),A2-HYDRO-VFSAND(W)(7),A2-HYDRO-SILT(W)(7),A2-SIEVE_#40(W)(7),A2-SIEVE_#140(7),A2-SIEVE_#20(W)(7),A2-SIEVE_#60(7),A2-HYDRO-FSAND(W)(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-HYDRO-CSAND(W)(7),A2-HYDRO-GRAVEL(W)(7),A2-HYDRO-MSAND(W)(7),A2-HYDRO-VCSAND(W)(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7),A2-SIEVE_#60(W)(7),A2-SIEVE_#4(W)(7) |
| L0912920-16B | Glass 250ml unpreserved | A      | N/A | 2.1        | Y    | Absent | A2-DUP()  |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912920  
**Report Date:** 02/05/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

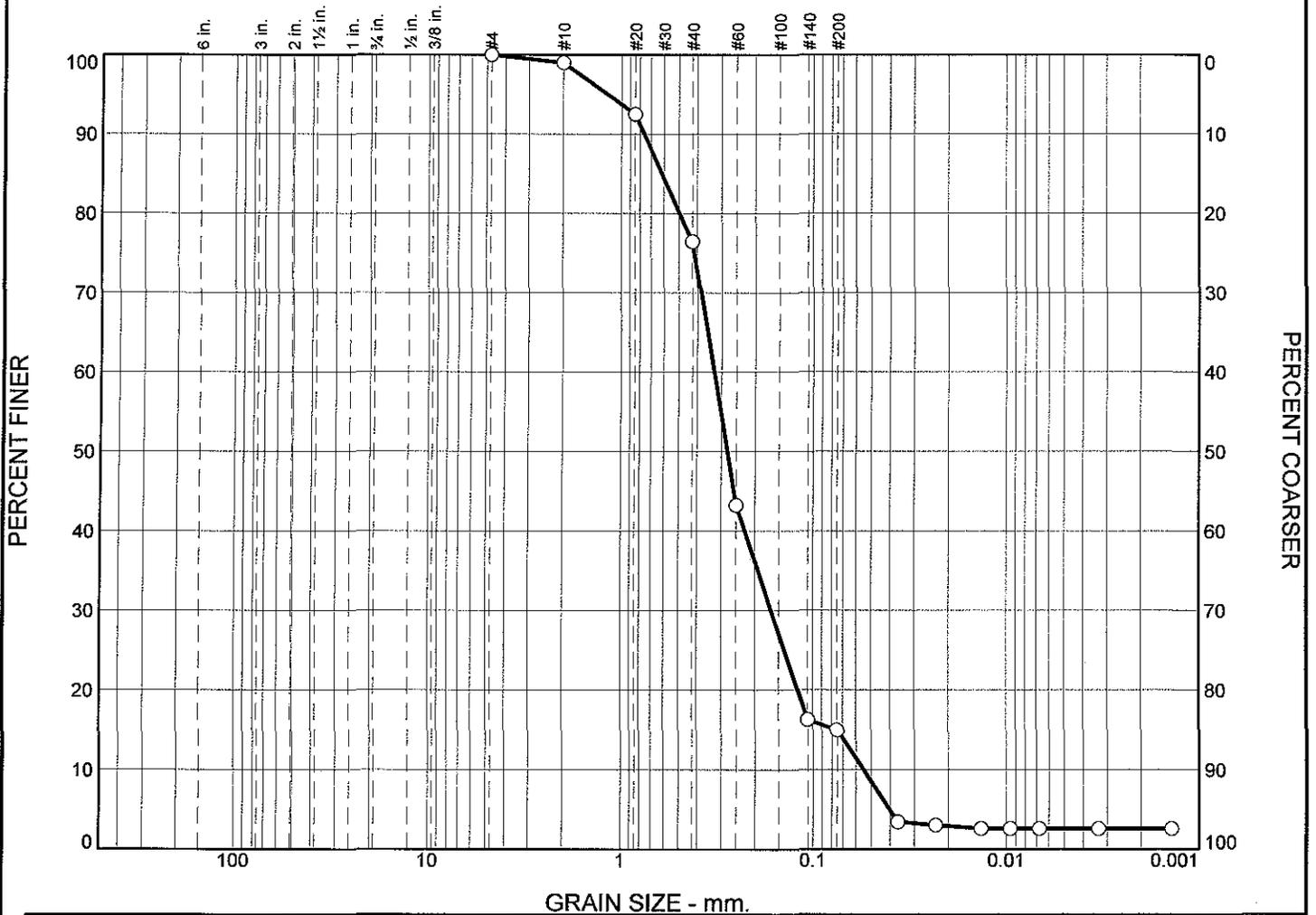
Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.2       | 0.8        | 5.3     | 13.5 | 37.0 | 21.8 | 9.4     | 8.7    | 0.6  | 0.1  | 0.0     | 2.6    |

|  | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|--|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
|  |    |    |                 |                 |                 |                 |                 |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506811     <b>Sample Number:</b> L0912920-01</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 506811  
 Sample Number: L0912920-01  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 53.76  
 Tare Wt. = 3.92  
 Minus #200 from wash = 13.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 57.49                       | 0.00         | #4                 | 521.66                  | 521.66               | 100.0         | 0.0              |
|                             |              | #10                | 485.26                  | 484.68               | 99.0          | 1.0              |
|                             |              | #20                | 409.08                  | 405.36               | 92.5          | 7.5              |
|                             |              | #40                | 372.24                  | 362.99               | 76.4          | 23.6             |
|                             |              | #60                | 385.21                  | 366.13               | 43.2          | 56.8             |
|                             |              | #140               | 358.29                  | 342.78               | 16.3          | 83.7             |
|                             |              | #200               | 345.93                  | 345.18               | 15.0          | 85.0             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 15.0  
 Weight of hydrometer sample = 57.49  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 3.4           | 96.6             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 3.0           | 97.0             |
| 15.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0135         | 2.6           | 97.4             |
| 30.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0096         | 2.6           | 97.4             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 2.6           | 97.4             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 2.6           | 97.4             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 2.6           | 97.4             |

**Fractional Components**

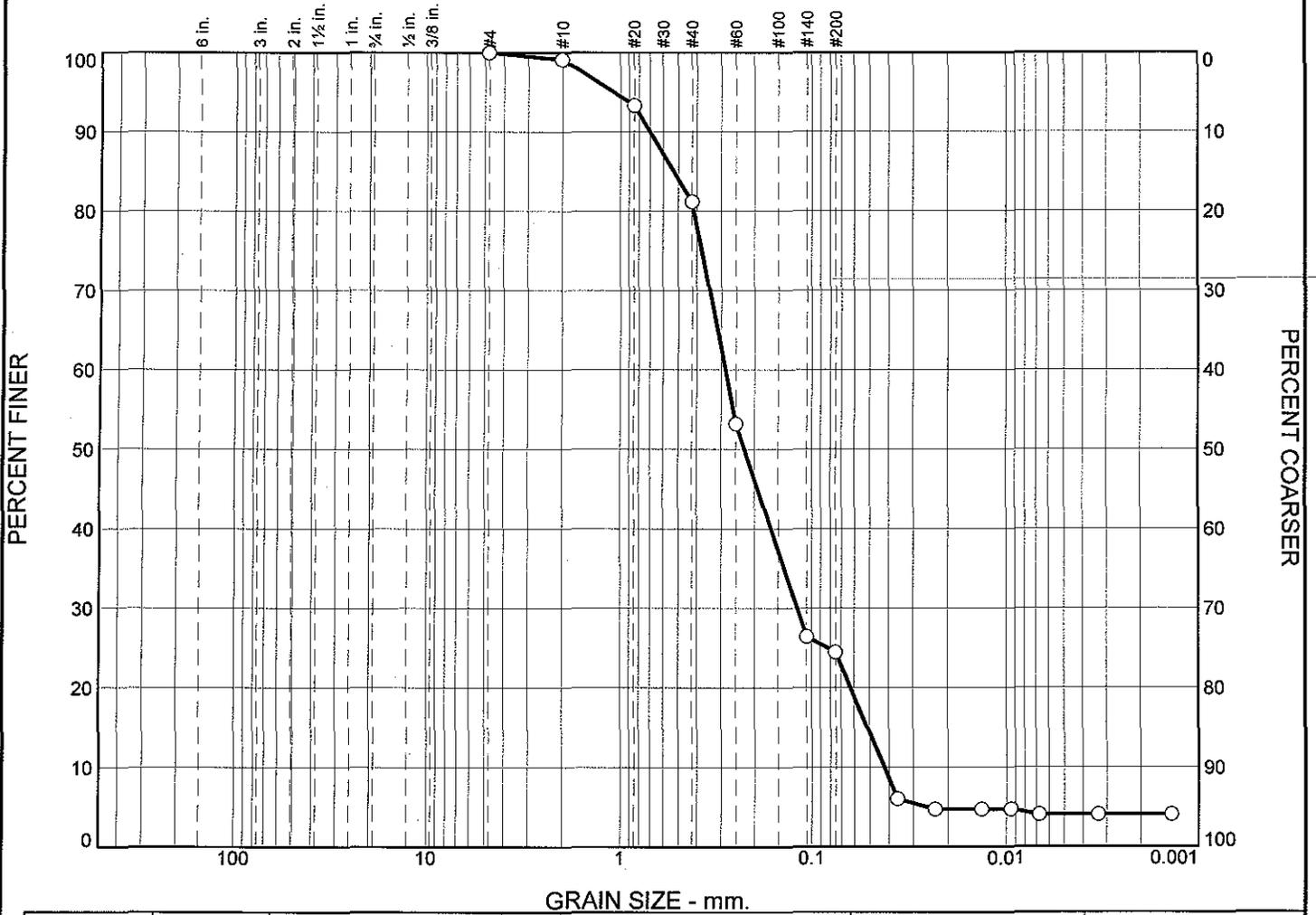
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.2     | 0.8      | 5.3     | 13.5 | 37.0 | 21.8 | 9.4     | 87.0  | 8.7  | 0.6  | 0.1  | 0.0     | 9.4   | 2.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0550          | 0.0758          | 0.1194          | 0.1641          | 0.2785          | 0.3268          | 0.4956          | 0.6148          | 0.7625          | 1.1798          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.40             | 5.95           | 1.50           |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      | % Silt  |      |      |      | % Clay |         |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|------|------|------|--------|---------|
|   |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine |        | V. Fine |
| ○ | 0.0        | 0.0       | 0.2       | 0.7        | 4.7     | 10.4 | 30.8 | 21.6 | 11.7    | 14.3 | 0.9  | 0.4  | 0.2    | 4.1     |

| ⊗ | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ○ |    |    | 0.5284          | 0.2845          | 0.2258          | 0.1189          | 0.0515          | 0.0423          | 1.18           | 6.73           |

| Material Description |  |  |  |  |  |  |  | USCS | AASHTO |
|----------------------|--|--|--|--|--|--|--|------|--------|
| ○                    |  |  |  |  |  |  |  |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912920 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br>○ <b>Source of Sample:</b> 506812 <b>Sample Number:</b> L0912920-02 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 506812  
 Sample Number: L0912920-02  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 49.94  
 Tare Wt. = 3.91  
 Minus #200 from wash = 23.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 60.06                       | 0.00         | #4                 | 520.81                  | 520.81               | 100.0         | 0.0              |
|                             |              | #10                | 482.54                  | 482.01               | 99.1          | 0.9              |
|                             |              | #20                | 414.45                  | 410.97               | 93.3          | 6.7              |
|                             |              | #40                | 385.16                  | 377.87               | 81.2          | 18.8             |
|                             |              | #60                | 386.62                  | 369.80               | 53.2          | 46.8             |
|                             |              | #140               | 363.20                  | 347.13               | 26.4          | 73.6             |
|                             |              | #200               | 347.64                  | 346.46               | 24.5          | 75.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 24.5  
 Weight of hydrometer sample = 60.06  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 6.0           | 94.0             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 4.7           | 95.3             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 4.7           | 95.3             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 4.7           | 95.3             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 4.1           | 95.9             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 4.1           | 95.9             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 4.1           | 95.9             |

## Fractional Components

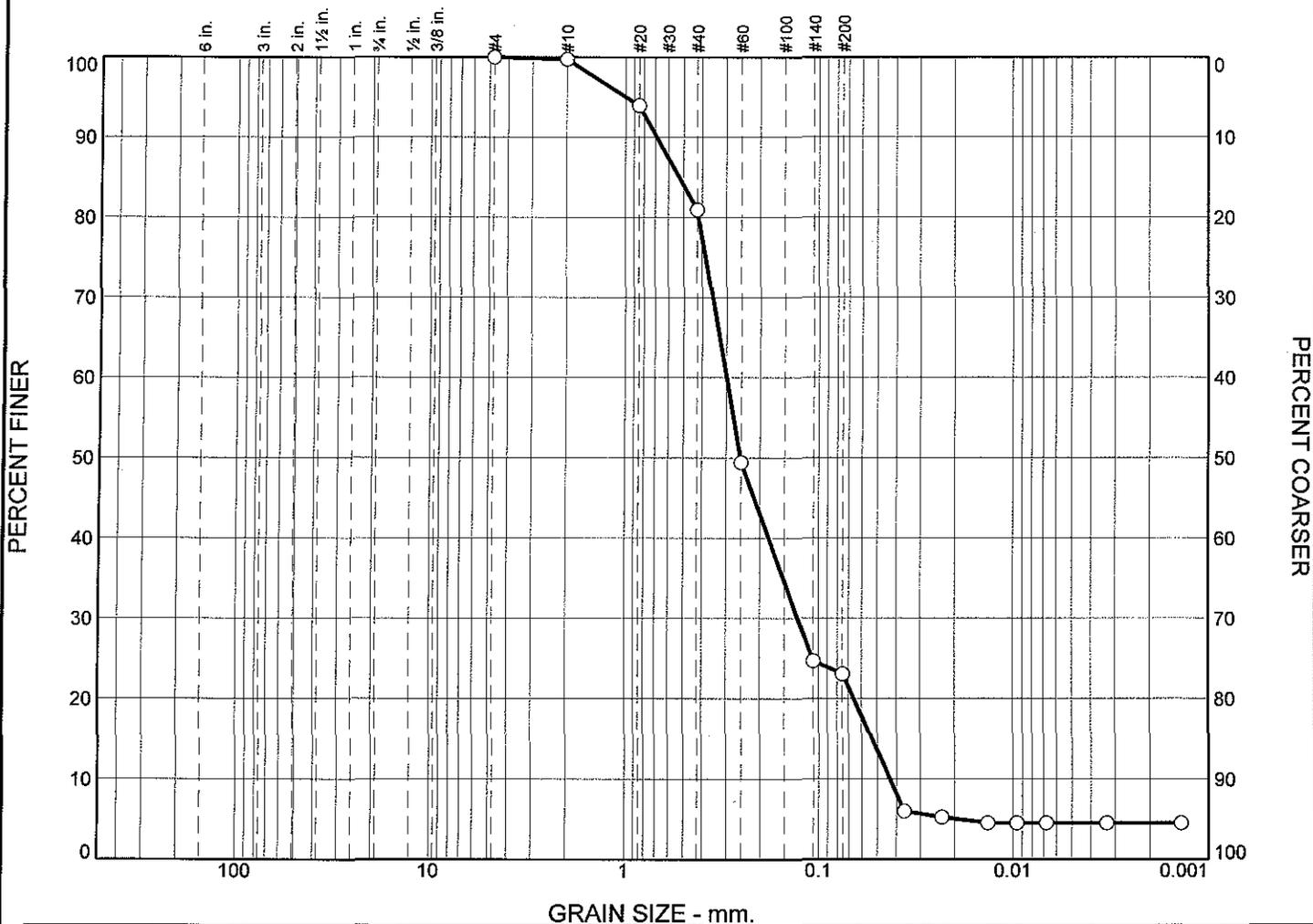
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.2     | 0.7      | 4.7     | 10.4 | 30.8 | 21.6 | 11.7    | 79.2  | 14.3 | 0.9  | 0.4  | 0.2     | 15.8  | 4.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0423          | 0.0515          | 0.0628          | 0.1189          | 0.2258          | 0.2845          | 0.4156          | 0.5284          | 0.7031          | 1.0888          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.18             | 6.73           | 1.18           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Gravel        | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.1             | 0.2             | 4.7             | 11.0            | 34.6            | 20.0            | 10.7           | 13.0           | 1.0  | 0.2  | 4.5     |        |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.5274          | 0.2987          | 0.2525          | 0.1275          | 0.0534          | 0.0432          | 1.26           | 6.92           |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 506813    <b>Sample Number:</b> L0912920-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912920

Location: 506813

Sample Number: L0912920-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 45.07  
 Tare Wt. = 3.93  
 Minus #200 from wash = 19.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 50.88                       | 0.00         | #4                 | 521.66                  | 521.66               | 100.0         | 0.0              |
|                             |              | #10                | 485.82                  | 485.68               | 99.7          | 0.3              |
|                             |              | #20                | 408.30                  | 405.36               | 93.9          | 6.1              |
|                             |              | #40                | 369.60                  | 362.99               | 81.0          | 19.0             |
|                             |              | #60                | 382.18                  | 366.13               | 49.4          | 50.6             |
|                             |              | #140               | 355.36                  | 342.78               | 24.7          | 75.3             |
|                             |              | #200               | 346.01                  | 345.18               | 23.1          | 76.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 23.1

Weight of hydrometer sample = 50.88

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 6.0           | 94.0             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 5.2           | 94.8             |
| 15.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0135         | 4.5           | 95.5             |
| 30.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0096         | 4.5           | 95.5             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 4.5           | 95.5             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 4.5           | 95.5             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 4.5           | 95.5             |

## Fractional Components

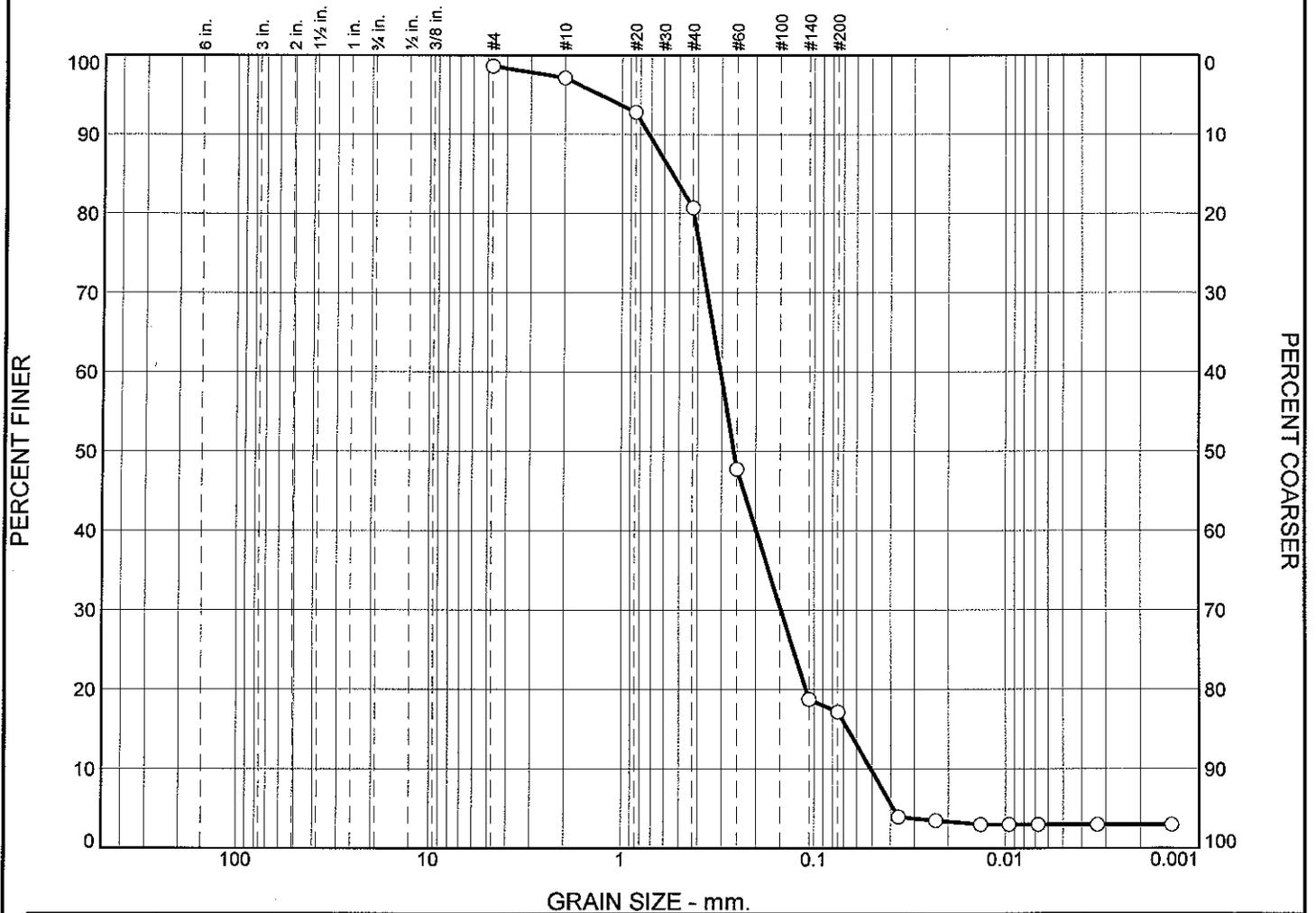
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.2      | 4.7     | 11.0 | 34.6 | 20.0 | 10.7    | 81.0  | 13.0 | 1.0  | 0.2  |         | 14.2  | 4.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0432          | 0.0534          | 0.0659          | 0.1275          | 0.2525          | 0.2987          | 0.4182          | 0.5274          | 0.6886          | 0.9935          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.22             | 6.92           | 1.26           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |                 | 1.2             | 3.5             | 10.0            | 35.8            | 23.5            | 10.5           | 10.0           | 0.7  | 0.1  | 0.0     | 3.0    |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.5430          | 0.3044          | 0.2592          | 0.1478          | 0.0667          | 0.0507          | 1.42           | 6.00           |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912920 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 506826 <b>Sample Number:</b> L0912920-04 | <b>Remarks:</b><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912920  
**Location:** 506826  
**Sample Number:** L0912920-04  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 52.26  
 Tare Wt. = 3.91  
 Minus #200 from wash = 15.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 57.14                       | 0.00         | #4                 | 521.60                  | 520.81               | 98.6          | 1.4              |
|                             |              | #10                | 482.86                  | 482.01               | 97.1          | 2.9              |
|                             |              | #20                | 413.44                  | 410.97               | 92.8          | 7.2              |
|                             |              | #40                | 384.77                  | 377.87               | 80.7          | 19.3             |
|                             |              | #60                | 388.64                  | 369.80               | 47.8          | 52.2             |
|                             |              | #140               | 363.70                  | 347.13               | 18.8          | 81.2             |
|                             |              | #200               | 347.38                  | 346.46               | 17.2          | 82.8             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 17.2  
 Weight of hydrometer sample = 57.14  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0364         | 4.0           | 96.0             |
| 5.00                | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0232         | 3.5           | 96.5             |
| 15.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0135         | 3.0           | 97.0             |
| 30.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0096         | 3.0           | 97.0             |
| 60.00               | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0068         | 3.0           | 97.0             |
| 250.00              | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0033         | 3.0           | 97.0             |
| 1440.00             | 22.0            | 1.0060         | 1.0062            | 0.0133 | 3.0 | 15.5       | 0.0014         | 3.0           | 97.0             |

**Fractional Components**

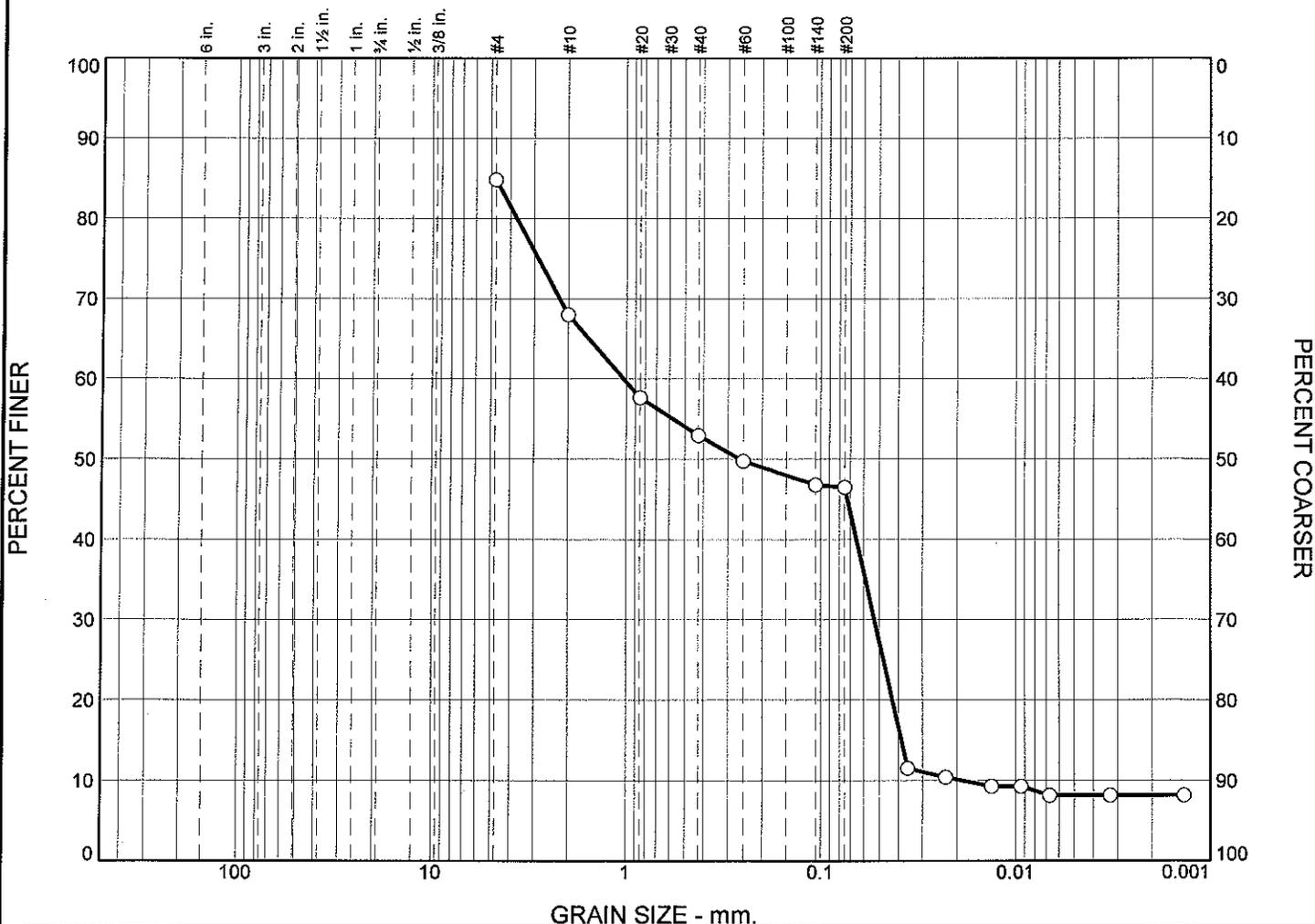
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.2      | 3.5     | 10.0 | 35.8 | 23.5 | 10.5    | 83.3  | 10.0 | 0.7  | 0.1  | 0.0     | 10.8  | 3.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0507          | 0.0667          | 0.1100          | 0.1478          | 0.2592          | 0.3044          | 0.4200          | 0.5430          | 0.7235          | 1.3120          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.33             | 6.00           | 1.42           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                             | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt      |               |      |         | % Clay |
|-----------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|-------------|---------------|------|---------|--------|
|                             |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.        | Med.          | Fine | V. Fine |        |
| ○                           |            |           |           | 13.5       | 8.4     | 5.6    | 4.2    | 2.4    | 9.5     | 26.7        | 1.6           | 1.0  | 0.5     | 8.1    |
| X                           | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu          |               |      |         |        |
| ○                           |            |           |           | 1.0318     | 0.2603  | 0.0529 | 0.0385 | 0.0190 | 0.14    | 54.35       |               |      |         |        |
| <b>Material Description</b> |            |           |           |            |         |        |        |        |         | <b>USCS</b> | <b>AASHTO</b> |      |         |        |
| ○                           |            |           |           |            |         |        |        |        |         |             |               |      |         |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 506911    <b>Sample Number:</b> L0912920-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912920

Location: 506911

Sample Number: L0912920-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 40.16  
 Tare Wt. = 4.01  
 Minus #200 from wash = 45.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 66.22                       | 0.00         | #4                 | 531.71                  | 521.66               | 84.8          | 15.2             |
|                             |              | #10                | 495.82                  | 484.68               | 68.0          | 32.0             |
|                             |              | #20                | 412.21                  | 405.36               | 57.7          | 42.3             |
|                             |              | #40                | 366.11                  | 362.99               | 52.9          | 47.1             |
|                             |              | #60                | 368.24                  | 366.13               | 49.8          | 50.2             |
|                             |              | #140               | 344.75                  | 342.78               | 46.8          | 53.2             |
|                             |              | #200               | 345.38                  | 345.18               | 46.5          | 53.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 46.5

Weight of hydrometer sample = 66.22

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 11.5          | 88.5             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 10.4          | 89.6             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 9.3           | 90.7             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 9.3           | 90.7             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 8.1           | 91.9             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 8.1           | 91.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 8.1           | 91.9             |

## Fractional Components

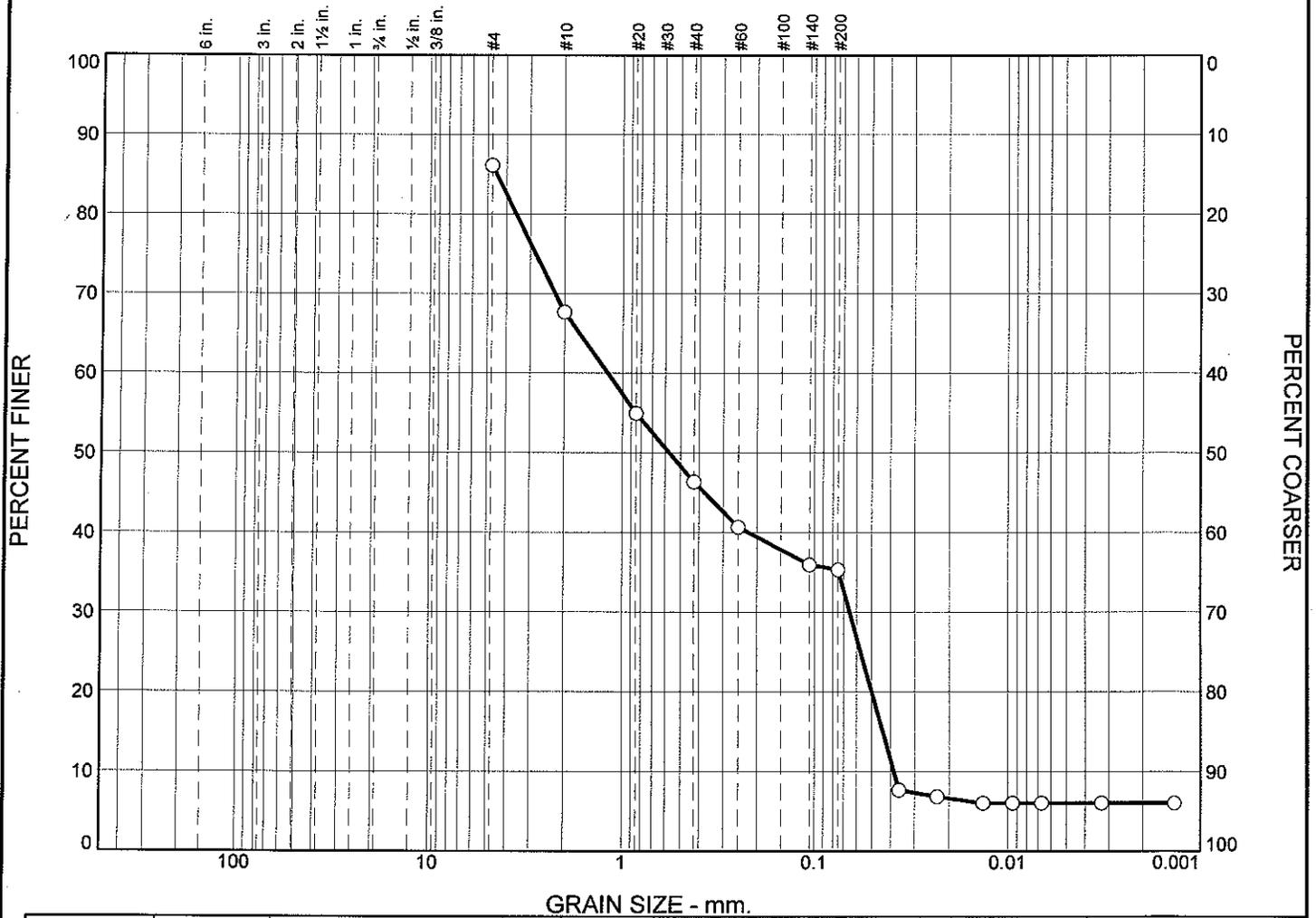
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 13.5     | 8.4     | 5.6  | 4.2  | 2.4  | 9.5     | 30.1  | 26.7 | 1.6  | 1.0  | 0.5     | 29.8  | 8.1  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0190          | 0.0385          | 0.0428          | 0.0529          | 0.2603          | 1.0318          | 3.7067          |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.28             | 54.35          | 0.14           |

Alpha Analytical

# Particle Size Distribution Report



| GRAIN SIZE - mm.                    |           |           |            |         |        |        |        |         |        |       |      |         |        |
|-------------------------------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|-------|------|---------|--------|
| % Boulders                          | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |       |      |         | % Clay |
|                                     |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med.  | Fine | V. Fine |        |
| <input type="radio"/>               |           |           | 14.8       | 10.3    | 9.0    | 7.8    | 3.8    | 8.4     | 21.0   | 1.2   | 0.2  |         | 6.0    |
| <input checked="" type="checkbox"/> | LL        | PL        | D85        | D60     | D50    | D30    | D15    | D10     | Cc     | Cu    |      |         |        |
| <input type="radio"/>               |           |           | 4.5044     | 1.1945  | 0.5705 | 0.0652 | 0.0438 | 0.0384  | 0.09   | 31.12 |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912920 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 506912 <b>Sample Number:</b> L0912920-06 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 506912  
 Sample Number: L0912920-06  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 48.72  
 Tare Wt. = 4.00  
 Minus #200 from wash = 34.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.01                       | 0.00         | #4                 | 530.24                  | 520.81               | 86.1          | 13.9             |
|                             |              | #10                | 494.58                  | 482.01               | 67.7          | 32.3             |
|                             |              | #20                | 419.61                  | 410.97               | 54.9          | 45.1             |
|                             |              | #40                | 383.72                  | 377.87               | 46.3          | 53.7             |
|                             |              | #60                | 373.68                  | 369.80               | 40.6          | 59.4             |
|                             |              | #140               | 350.34                  | 347.13               | 35.9          | 64.1             |
|                             |              | #200               | 346.88                  | 346.46               | 35.3          | 64.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 35.3  
 Weight of hydrometer sample = 68.01  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 7.7           | 92.3             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 6.8           | 93.2             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 6.0           | 94.0             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 6.0           | 94.0             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 6.0           | 94.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 6.0           | 94.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.0           | 94.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 14.8     | 10.3    | 9.0  | 7.8  | 3.8  | 8.4     | 39.3  | 21.0 | 1.2  | 0.2  |         | 22.4  | 6.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0384          | 0.0438          | 0.0500          | 0.0652          | 0.5705          | 1.1945          | 3.5646          | 4.5044          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.52             | 31.12          | 0.09           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 506913  
 Sample Number: L0912920-07  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 39.25  
 Tare Wt. = 4.16  
 Minus #200 from wash = 50.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 70.59                       | 0.00         | #4                 | 544.13                  | 521.66               | 68.2          | 31.8             |
|                             |              | #10                | 490.93                  | 484.68               | 59.3          | 40.7             |
|                             |              | #20                | 408.57                  | 405.36               | 54.8          | 45.2             |
|                             |              | #40                | 363.55                  | 362.99               | 54.0          | 46.0             |
|                             |              | #60                | 366.97                  | 366.13               | 52.8          | 47.2             |
|                             |              | #140               | 343.56                  | 342.78               | 51.7          | 48.3             |
|                             |              | #200               | 345.31                  | 345.18               | 51.5          | 48.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 51.5  
 Weight of hydrometer sample = 70.59  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 10.8          | 89.2             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 9.6           | 90.4             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 9.6           | 90.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 9.6           | 90.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 9.6           | 90.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 8.4           | 91.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 8.4           | 91.6             |

## Fractional Components

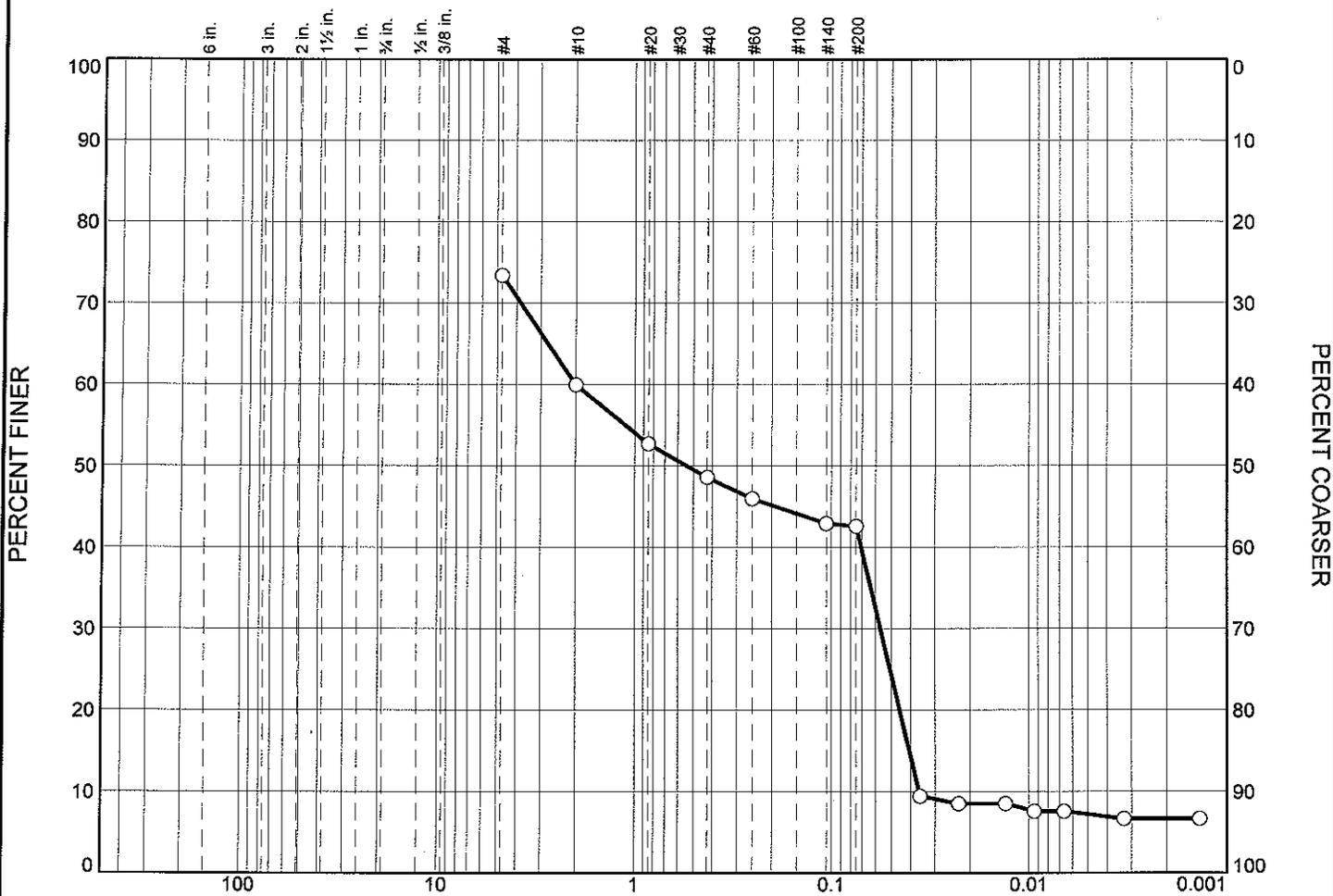
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 7.1      | 3.7     | 1.4  | 1.4  | 0.9  | 10.6    | 18.0  | 30.9 | 0.8  | 0.0  | 0.9     | 32.6  | 8.7  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0266          | 0.0389          | 0.0426          | 0.0510          | 0.0730          | 2.1386          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.55             | 80.27          | 0.05           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |           | 10.8       | 5.8     | 4.6    | 3.6    | 2.4    | 9.1     | 25.3   | 0.6  | 0.9  | 0.7     | 6.9    |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| <input type="radio"/>               |            |           |           | 2.0099     | 0.5412  | 0.0567 | 0.0405 | 0.0362 | 0.04    | 55.45  |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 506926    <b>Sample Number:</b> L0912920-08</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912920

Location: 506926

Sample Number: L0912920-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 47.35  
 Tare Wt. = 4.06  
 Minus #200 from wash = 41.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 74.13                       | 0.00         | #4                 | 540.52                  | 520.81               | 73.4          | 26.6             |
|                             |              | #10                | 492.01                  | 482.01               | 59.9          | 40.1             |
|                             |              | #20                | 416.34                  | 410.97               | 52.7          | 47.3             |
|                             |              | #40                | 380.92                  | 377.87               | 48.6          | 51.4             |
|                             |              | #60                | 371.76                  | 369.80               | 45.9          | 54.1             |
|                             |              | #140               | 349.37                  | 347.13               | 42.9          | 57.1             |
|                             |              | #200               | 346.72                  | 346.46               | 42.5          | 57.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 42.5

Weight of hydrometer sample = 74.13

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 9.4           | 90.6             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 8.5           | 91.5             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 8.5           | 91.5             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 7.6           | 92.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 7.6           | 92.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 6.6           | 93.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.6           | 93.4             |

## Fractional Components

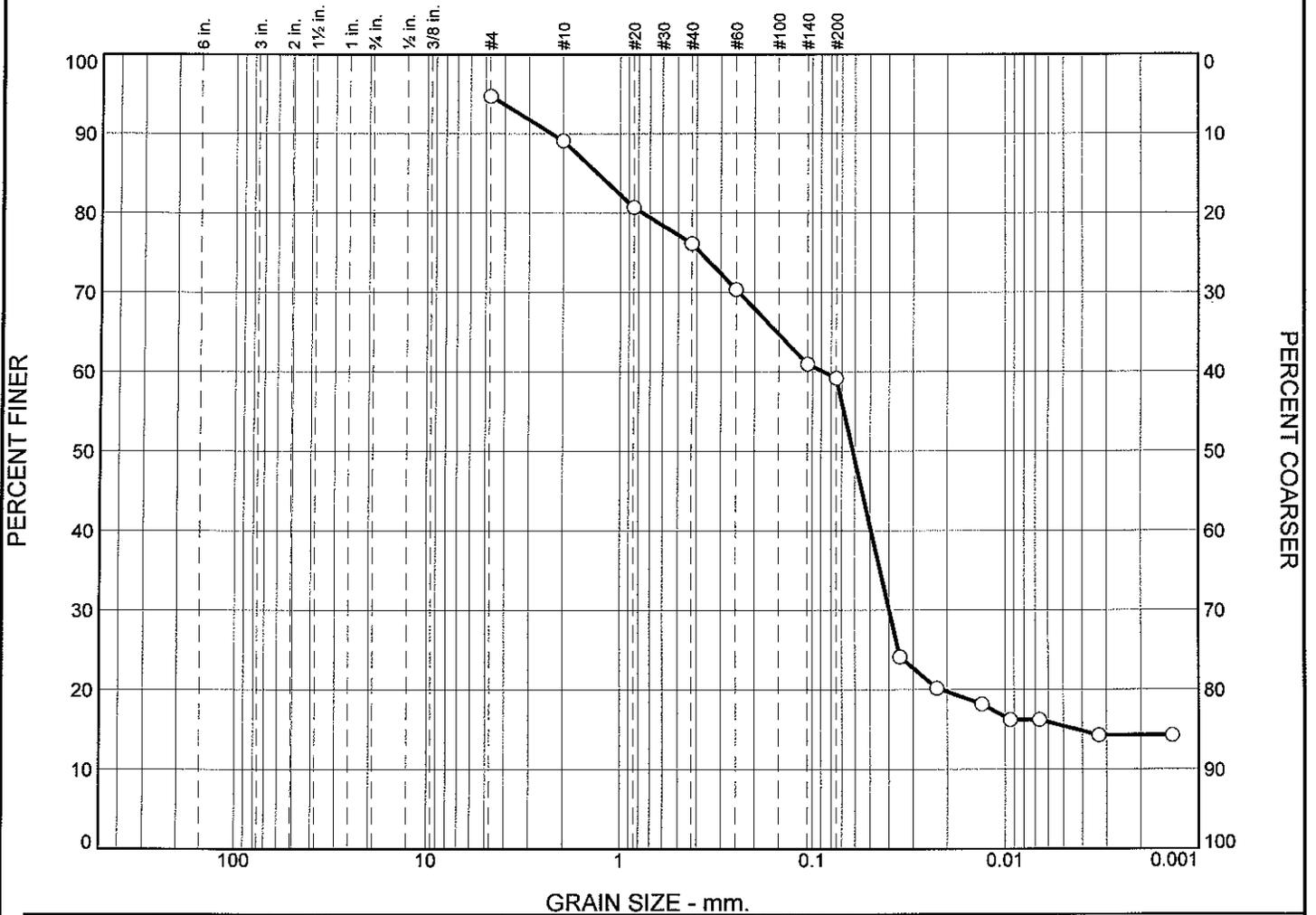
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 10.8     | 5.8     | 4.6  | 3.6  | 2.4  | 9.1     | 25.5  | 25.3 | 0.6  | 0.9  | 0.7     | 27.5  | 6.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0362          | 0.0405          | 0.0453          | 0.0567          | 0.5412          | 2.0099          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.67             | 55.45          | 0.04           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 4.5        | 6.8     | 5.1    | 6.9    | 7.5  | 12.1    | 27.7   | 4.2  | 2.6  | 1.5     | 14.7   |
| X | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 1.3178    | 0.0881     | 0.0615  | 0.0399 | 0.0043 |      |         |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507011    <b>Sample Number:</b> L0912920-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 507011  
 Sample Number: L0912920-09  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 26.62  
 Tare Wt. = 4.02  
 Minus #200 from wash = 53.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 48.10                       | 0.00         | #4                 | 524.19                  | 521.66               | 94.7          | 5.3              |
|                             |              | #10                | 487.40                  | 484.68               | 89.1          | 10.9             |
|                             |              | #20                | 409.39                  | 405.36               | 80.7          | 19.3             |
|                             |              | #40                | 365.18                  | 362.99               | 76.2          | 23.8             |
|                             |              | #60                | 368.93                  | 366.13               | 70.3          | 29.7             |
|                             |              | #140               | 347.29                  | 342.78               | 61.0          | 39.0             |
|                             |              | #200               | 346.04                  | 345.18               | 59.2          | 40.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 59.2  
 Weight of hydrometer sample = 48.10  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 24.1          | 75.9             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 20.2          | 79.8             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 18.2          | 81.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 16.2          | 83.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 16.2          | 83.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 14.2          | 85.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 14.2          | 85.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 4.5      | 6.8     | 5.1  | 6.9  | 7.5  | 12.1    | 38.4  | 27.7 | 4.2  | 2.6  | 1.5     | 36.0  | 14.7 |

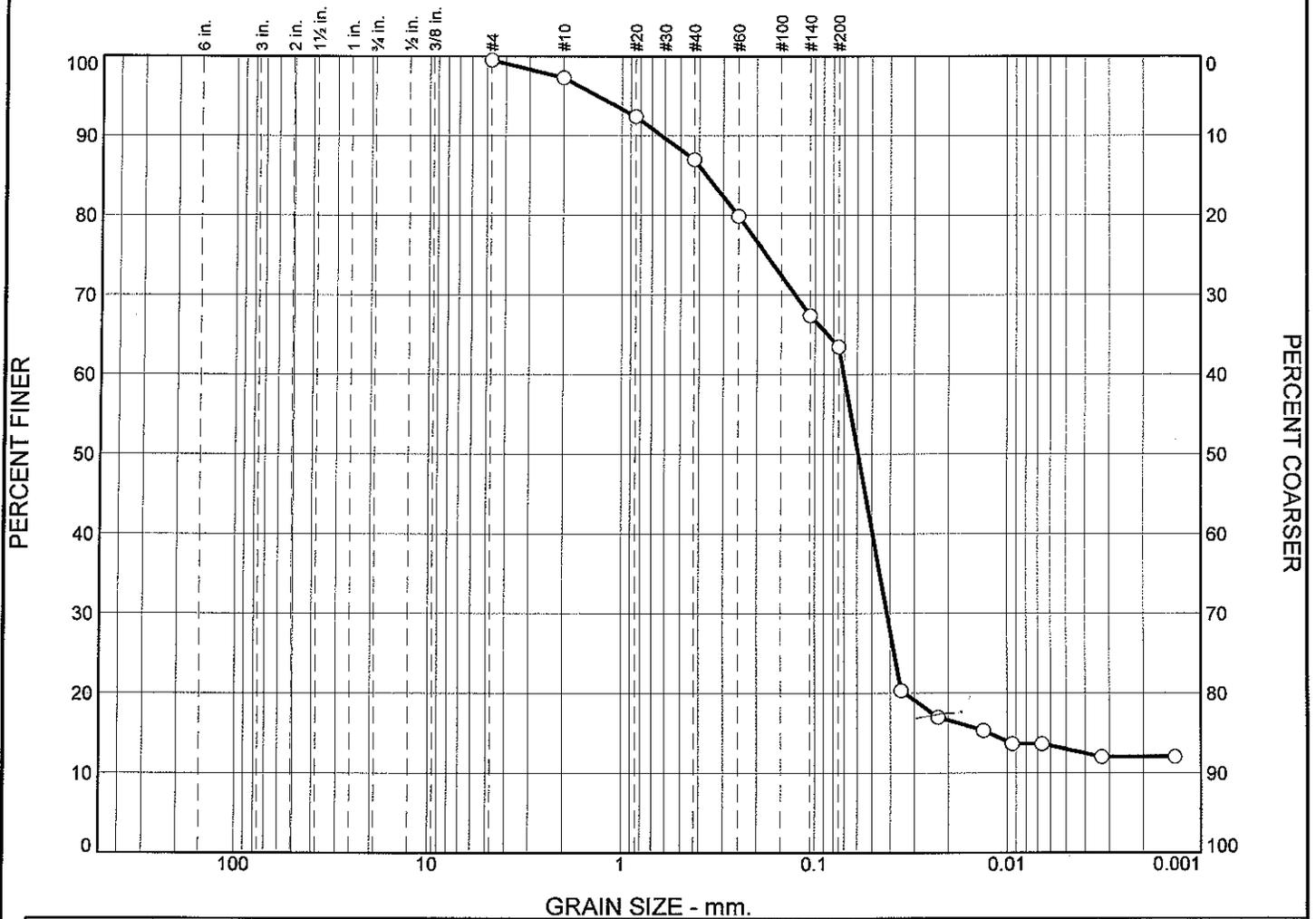
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0043          | 0.0216          | 0.0399          | 0.0615          | 0.0881          | 0.7633          | 1.3178          | 2.3004          |                 |

Fineness Modulus

1.16

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|------|----------------|----------------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 1.8        | 4.0     | 5.0    | 8.4    | 10.1 | 16.7           | 33.7           | 3.6  | 2.1  | 1.3     | 12.4   |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.3662    | 0.0706     | 0.0592  | 0.0416 | 0.0123 |      |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507012    <b>Sample Number:</b> L0912920-10</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |
| <p><b>Figure</b></p>  |                        |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 507012  
 Sample Number: L0912920-10  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 27.47  
 Tare Wt. = 3.95  
 Minus #200 from wash = 61.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 61.25                       | 0.00         | #4                 | 521.11                  | 520.81               | 99.5          | 0.5              |
|                             |              | #10                | 483.37                  | 482.01               | 97.3          | 2.7              |
|                             |              | #20                | 413.95                  | 410.97               | 92.4          | 7.6              |
|                             |              | #40                | 381.20                  | 377.87               | 87.0          | 13.0             |
|                             |              | #60                | 374.14                  | 369.80               | 79.9          | 20.1             |
|                             |              | #140               | 354.80                  | 347.13               | 67.4          | 32.6             |
|                             |              | #200               | 348.86                  | 346.46               | 63.5          | 36.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 63.5  
 Weight of hydrometer sample = 61.25  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 20.3          | 79.7             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 17.0          | 83.0             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 15.3          | 84.7             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 13.7          | 86.3             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 13.7          | 86.3             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 12.0          | 88.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 12.0          | 88.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.8      | 4.0     | 5.0  | 8.4  | 10.1 | 16.7    | 44.2  | 33.7 | 3.6  | 2.1  | 1.3     | 40.7  | 12.4 |

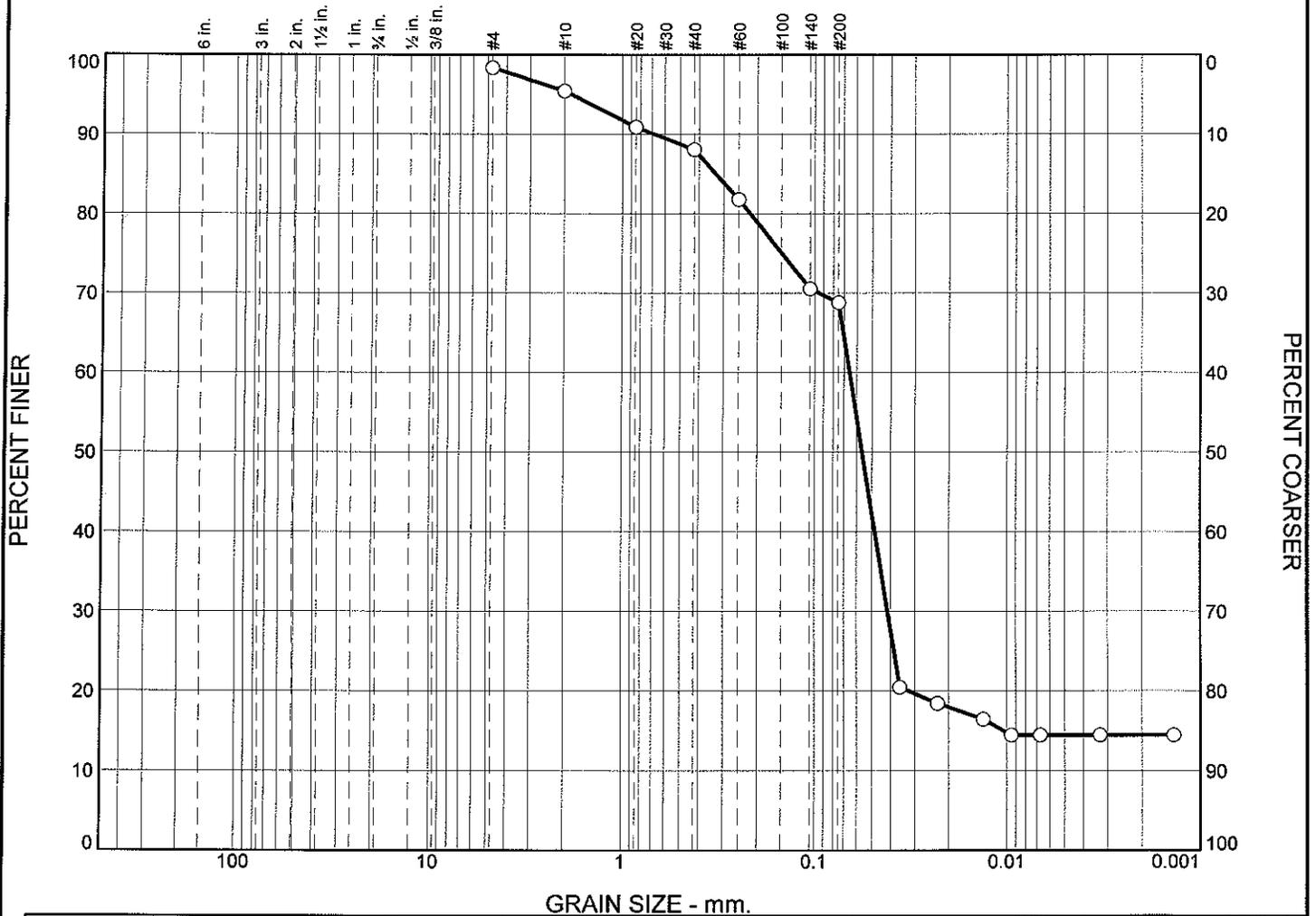
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0123          | 0.0337          | 0.0416          | 0.0592          | 0.0706          | 0.2518          | 0.3662          | 0.6240          | 1.3370          |

Fineness  
Modulus

0.64

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |  |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|--|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |  |
| <input type="radio"/>               |            |           |           | 2.4        | 3.6     | 3.1    | 6.9    | 9.1  | 15.8    | 37.1   | 2.8  | 2.6  | 0.0     | 14.4   |  |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10  | Cc      | Cu     |      |      |         |        |  |
| <input type="radio"/>               |            |           | 0.3286    | 0.0656     | 0.0562  | 0.0414 | 0.0104 |      |         |        |      |      |         |        |  |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |   |
|--|---|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 507013    <b>Sample Number:</b> L0912920-11</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p> <p style="text-align: center;"><b>Figure</b></p> |
|--|---|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 507013  
 Sample Number: L0912920-11  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 24.11  
 Tare Wt. = 3.95  
 Minus #200 from wash = 63.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 55.15                       | 0.00         | #4                 | 522.50                  | 521.60               | 98.4          | 1.6              |
|                             |              | #10                | 486.30                  | 484.68               | 95.4          | 4.6              |
|                             |              | #20                | 407.86                  | 405.36               | 90.9          | 9.1              |
|                             |              | #40                | 364.56                  | 362.99               | 88.1          | 11.9             |
|                             |              | #60                | 369.60                  | 366.13               | 81.8          | 18.2             |
|                             |              | #140               | 348.97                  | 342.78               | 70.5          | 29.5             |
|                             |              | #200               | 346.14                  | 345.18               | 68.8          | 31.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 68.8  
 Weight of hydrometer sample = 55.15  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 20.5          | 79.5             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 18.5          | 81.5             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 16.5          | 83.5             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 14.4          | 85.6             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 14.4          | 85.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 14.4          | 85.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 14.4          | 85.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.4      | 3.6     | 3.1  | 6.9  | 9.1  | 15.8    | 38.5  | 37.1 | 2.8  | 2.6  | 0.0     | 42.5  | 14.4 |

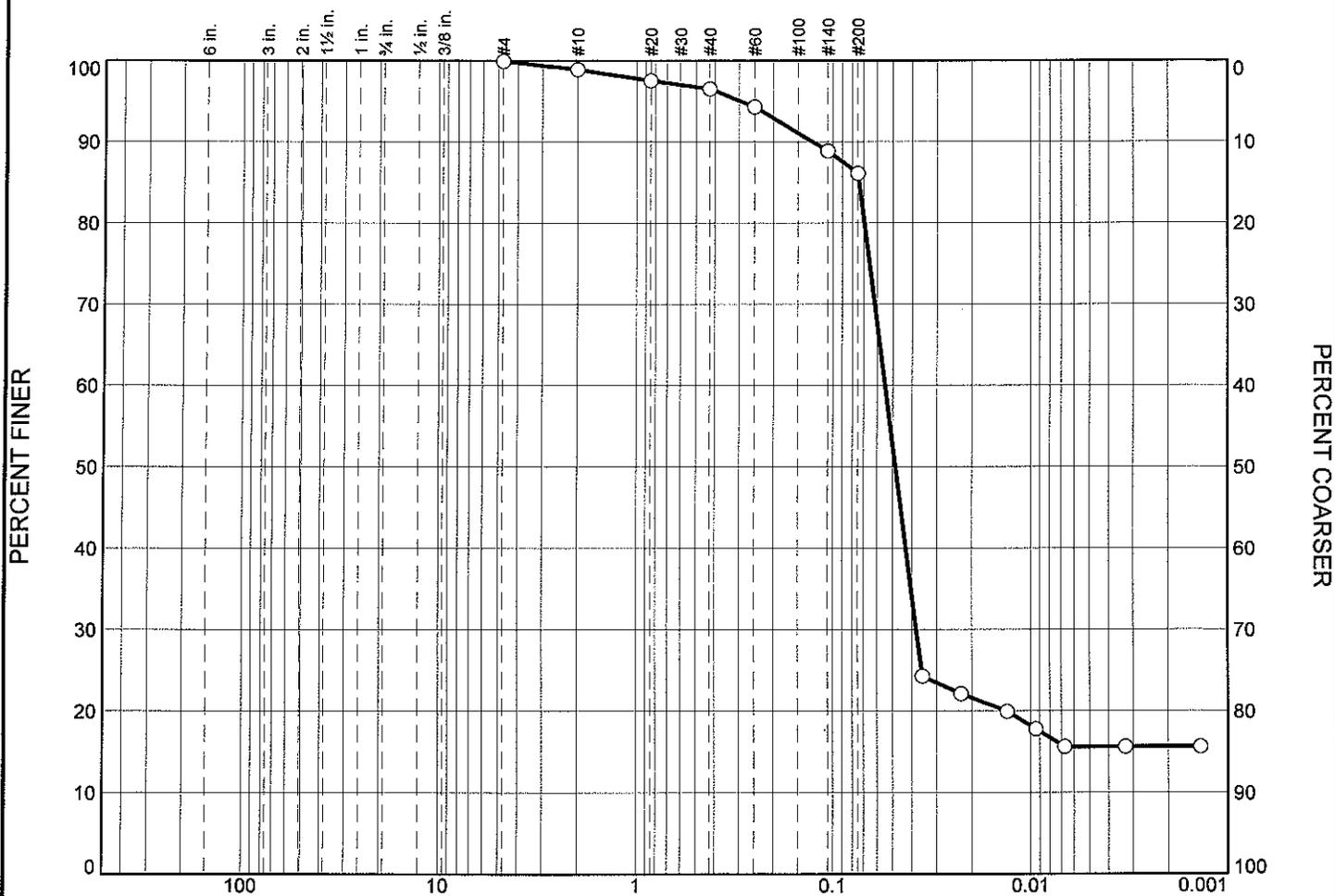
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0104          | 0.0323          | 0.0414          | 0.0562          | 0.0656          | 0.2185          | 0.3286          | 0.6831          | 1.8439          |

Fineness Modulus

0.65

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders           | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |        |      |         | % Clay |  |
|---|----------------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|--------|------|---------|--------|--|
|   |                      |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med.   | Fine | V. Fine |        |  |
| ○ |                      |           |                 | 0.8             | 1.1             | 1.1             | 2.4             | 4.4             | 18.8           | 47.5           | 3.0    | 4.0  | 1.0     | 15.6   |  |
| ⊗ | LL                   | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |        |      |         |        |  |
| ○ |                      |           | 0.0740          | 0.0547          | 0.0484          | 0.0380          |                 |                 |                |                |        |      |         |        |  |
| ○ | Material Description |           |                 |                 |                 |                 |                 |                 |                | USCS           | AASHTO |      |         |        |  |
| ○ |                      |           |                 |                 |                 |                 |                 |                 |                |                |        |      |         |        |  |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507026    <b>Sample Number:</b> L0912920-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912920

Location: 507026

Sample Number: L0912920-12

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 13.57  
 Tare Wt. = 3.96  
 Minus #200 from wash = 85.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 63.91                       | 0.00         | #4                 | 521.72                  | 521.66               | 99.9          | 0.1              |
|                             |              | #10                | 485.32                  | 484.68               | 98.9          | 1.1              |
|                             |              | #20                | 406.25                  | 405.36               | 97.5          | 2.5              |
|                             |              | #40                | 363.63                  | 362.99               | 96.5          | 3.5              |
|                             |              | #60                | 367.54                  | 366.13               | 94.3          | 5.7              |
|                             |              | #140               | 346.26                  | 342.78               | 88.9          | 11.1             |
|                             |              | #200               | 346.94                  | 345.18               | 86.1          | 13.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 86.1

Weight of hydrometer sample = 63.91

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 24.3          | 75.7             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 22.1          | 77.9             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 19.9          | 80.1             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 17.8          | 82.2             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 15.6          | 84.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 15.6          | 84.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 15.6          | 84.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.8      | 1.1     | 1.1  | 2.4  | 4.4  | 18.8    | 27.8  | 47.5 | 3.0  | 4.0  | 1.0     | 55.5  | 15.6 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 | 0.0134          | 0.0380          | 0.0484          | 0.0547          | 0.0697          | 0.0740          | 0.1269          | 0.2955          |

Fineness

Modulus

0.20

Alpha Analytical



**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 507111  
 Sample Number: L0912920-13  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 46.64  
 Tare Wt. = 4.02  
 Minus #200 from wash = 40.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 71.49                       | 0.00         | #4                 | 521.76                  | 520.81               | 98.7          | 1.3              |
|                             |              | #10                | 485.30                  | 482.01               | 94.1          | 5.9              |
|                             |              | #20                | 417.51                  | 410.97               | 84.9          | 15.1             |
|                             |              | #40                | 386.72                  | 377.87               | 72.5          | 27.5             |
|                             |              | #60                | 383.35                  | 369.80               | 53.6          | 46.4             |
|                             |              | #140               | 355.46                  | 347.13               | 41.9          | 58.1             |
|                             |              | #200               | 347.26                  | 346.46               | 40.8          | 59.2             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 40.8  
 Weight of hydrometer sample = 71.49  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 8.4           | 91.6             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 7.5           | 92.5             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 6.6           | 93.4             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 6.6           | 93.4             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 6.6           | 93.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 6.6           | 93.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.6           | 93.4             |

**Fractional Components**

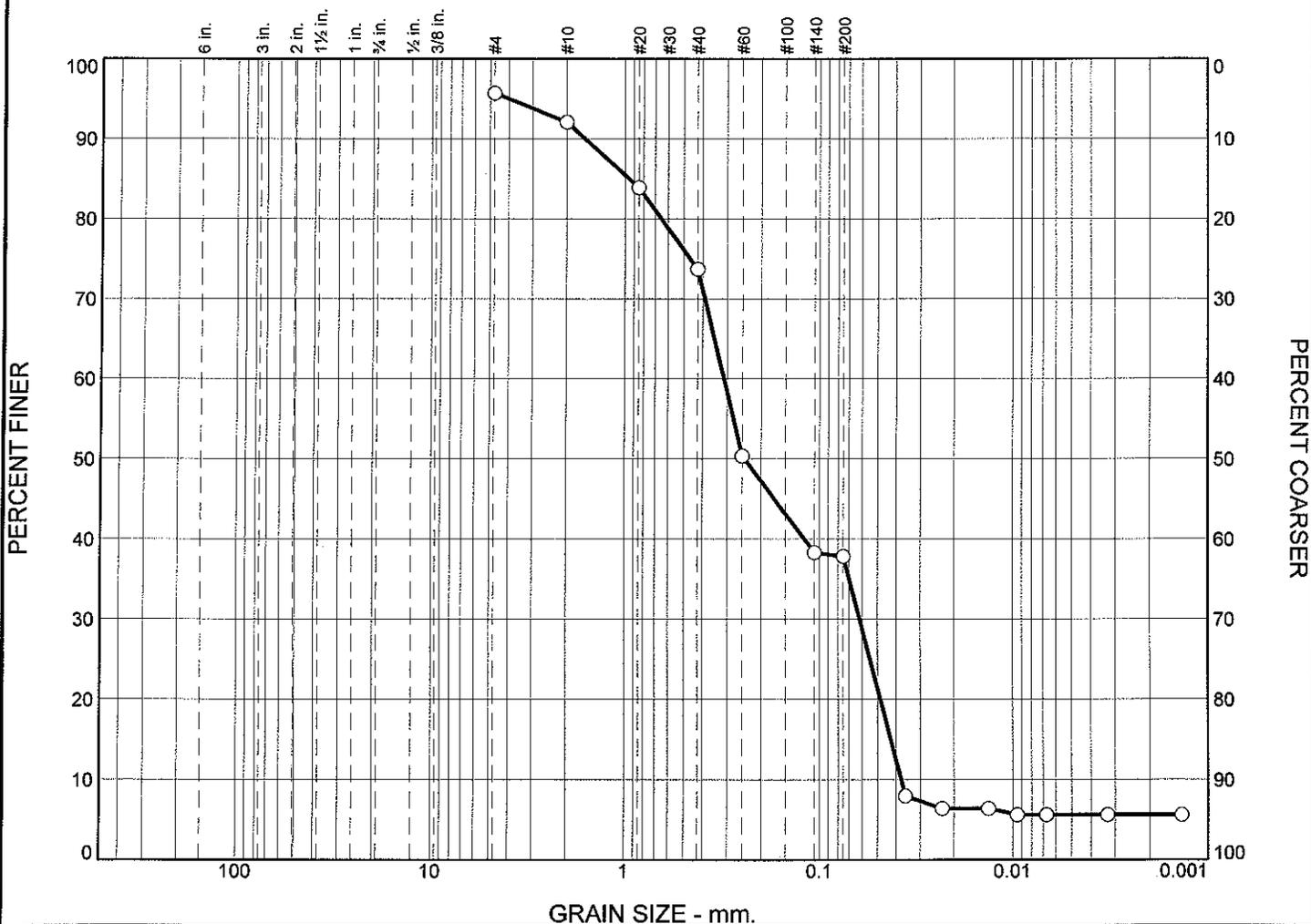
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.7      | 7.4     | 11.3 | 21.8 | 9.4  | 11.5    | 61.4  | 24.6 | 1.2  | 0.3  | 0.0     | 26.1  | 6.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0374          | 0.0419          | 0.0469          | 0.0587          | 0.1920          | 0.2992          | 0.6453          | 0.8563          | 1.3669          | 2.3824          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.32             | 8.00           | 0.31           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 2.9             | 6.7             | 9.3             | 25.7            | 9.8             | 10.1           | 23.1           | 1.0  | 0.8  | 0.0     | 5.6    |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.9544          | 0.3113          | 0.2438          | 0.0618          | 0.0426          | 0.0376          | 0.33           | 8.27           |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912920    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507112    <b>Sample Number:</b> L0912920-14</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912920

Location: 507112

Sample Number: L0912920-14

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 54.38  
 Tare Wt. = 4.04  
 Minus #200 from wash = 35.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 78.03                       | 0.00         | #4                 | 525.01                  | 521.66               | 95.7          | 4.3              |
|                             |              | #10                | 487.51                  | 484.68               | 92.1          | 7.9              |
|                             |              | #20                | 411.75                  | 405.36               | 83.9          | 16.1             |
|                             |              | #40                | 370.94                  | 362.99               | 73.7          | 26.3             |
|                             |              | #60                | 384.35                  | 366.13               | 50.4          | 49.6             |
|                             |              | #140               | 352.17                  | 342.78               | 38.3          | 61.7             |
|                             |              | #200               | 345.56                  | 345.18               | 37.8          | 62.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 37.8

Weight of hydrometer sample = 78.08

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 7.9           | 92.1             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 6.4           | 93.6             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 6.4           | 93.6             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 5.6           | 94.4             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 5.6           | 94.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 5.6           | 94.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 5.6           | 94.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.9      | 6.7     | 9.3  | 25.7 | 9.8  | 10.1    | 61.6  | 23.1 | 1.0  | 0.8  | 0.0     | 24.9  | 5.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0376          | 0.0426          | 0.0482          | 0.0618          | 0.2438          | 0.3113          | 0.6523          | 0.9544          | 1.6093          | 4.0132          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.44             | 8.27           | 0.33           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912920  
 Location: 507113  
 Sample Number: L0912920-15  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 36.40  
 Tare Wt. = 3.97  
 Minus #200 from wash = 48.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.83                       | 0.00         | #4                 | 522.17                  | 520.81               | 97.8          | 2.2              |
|                             |              | #10                | 484.81                  | 482.01               | 93.4          | 6.6              |
|                             |              | #20                | 414.77                  | 410.97               | 87.3          | 12.7             |
|                             |              | #40                | 386.16                  | 377.87               | 74.1          | 25.9             |
|                             |              | #60                | 380.51                  | 369.80               | 57.1          | 42.9             |
|                             |              | #140               | 351.70                  | 347.13               | 49.8          | 50.2             |
|                             |              | #200               | 347.00                  | 346.46               | 49.0          | 51.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 49.0  
 Weight of hydrometer sample = 62.83  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 14.0          | 86.0             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 10.3          | 89.7             |
| 15.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0134         | 9.0           | 91.0             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 9.0           | 91.0             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 9.0           | 91.0             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 9.0           | 91.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 9.0           | 91.0             |

## Fractional Components

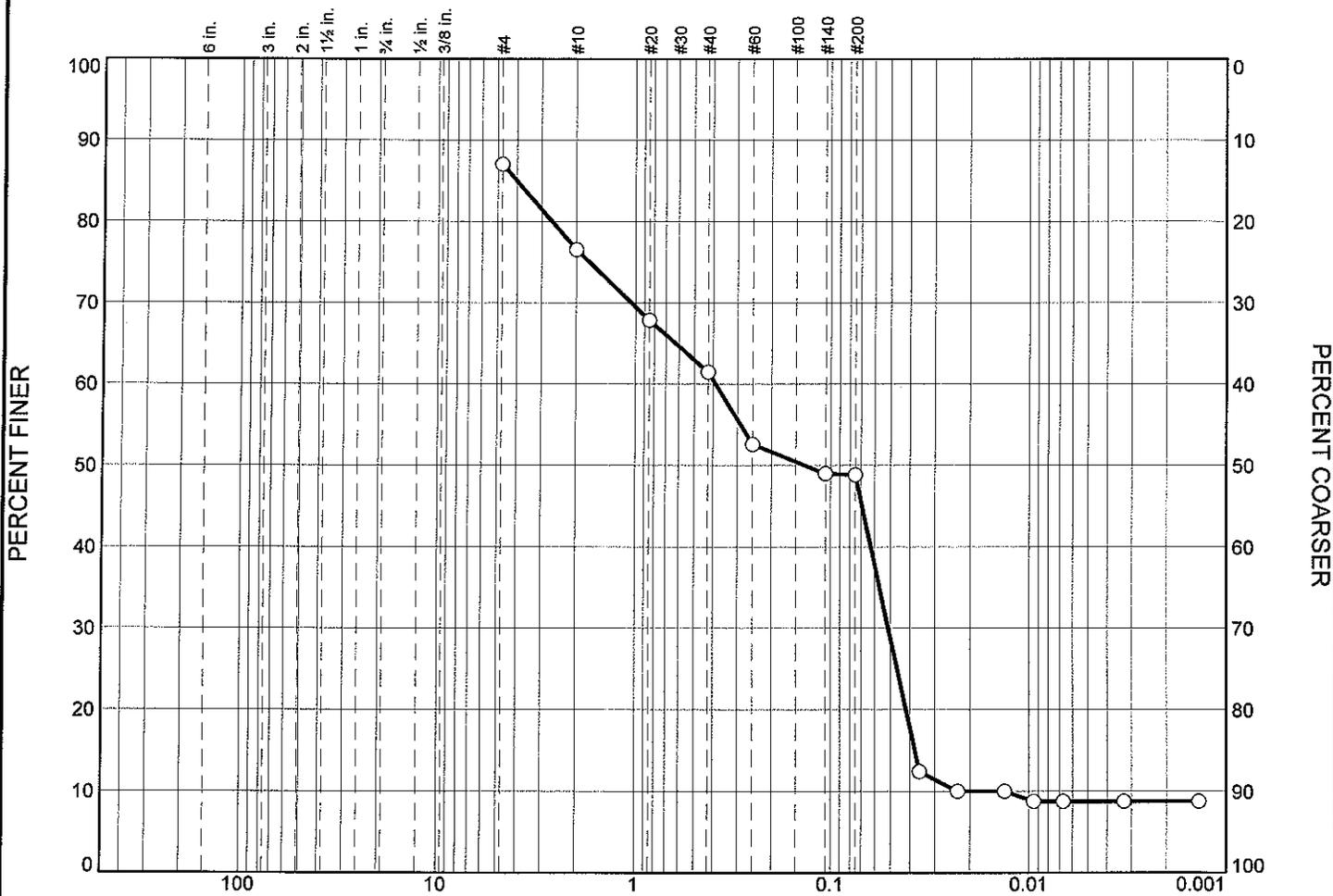
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.6      | 4.9     | 11.3 | 20.1 | 5.9  | 10.7    | 52.9  | 27.6 | 3.5  | 0.4  |         | 31.5  | 9.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0204          | 0.0362          | 0.0403          | 0.0499          | 0.1083          | 0.2737          | 0.5783          | 0.7520          | 1.2400          | 2.7395          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.22             | 13.39          | 0.45           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| <input type="radio"/>               |            |           |                 | 8.4             | 7.0             | 6.5             | 10.4            | 2.9             | 9.8            | 28.3           | 1.6  | 1.2  | 0.0     | 8.8    |  |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| <input type="radio"/>               |            |           | 4.0197          | 0.3894          | 0.1351          | 0.0512          | 0.0377          | 0.0232          | 0.29           | 16.81          |      |      |         |        |  |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** L0912920    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 507126    **Sample Number:** L0912920-16  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912920

Location: 507126

Sample Number: L0912920-16

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 38.68  
 Tare Wt. = 4.03  
 Minus #200 from wash = 46.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 64.59                       | 0.00         | #4                 | 530.04                  | 521.66               | 87.0          | 13.0             |
|                             |              | #10                | 491.46                  | 484.68               | 76.5          | 23.5             |
|                             |              | #20                | 410.98                  | 405.36               | 67.8          | 32.2             |
|                             |              | #40                | 367.10                  | 362.99               | 61.5          | 38.5             |
|                             |              | #60                | 371.87                  | 366.13               | 52.6          | 47.4             |
|                             |              | #140               | 345.10                  | 342.78               | 49.0          | 51.0             |
|                             |              | #200               | 345.28                  | 345.18               | 48.8          | 51.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 48.8

Weight of hydrometer sample = 64.59

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 12.4          | 87.6             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 10.0          | 90.0             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 10.0          | 90.0             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 8.8           | 91.2             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 8.8           | 91.2             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 8.8           | 91.2             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 8.8           | 91.2             |

## Fractional Components

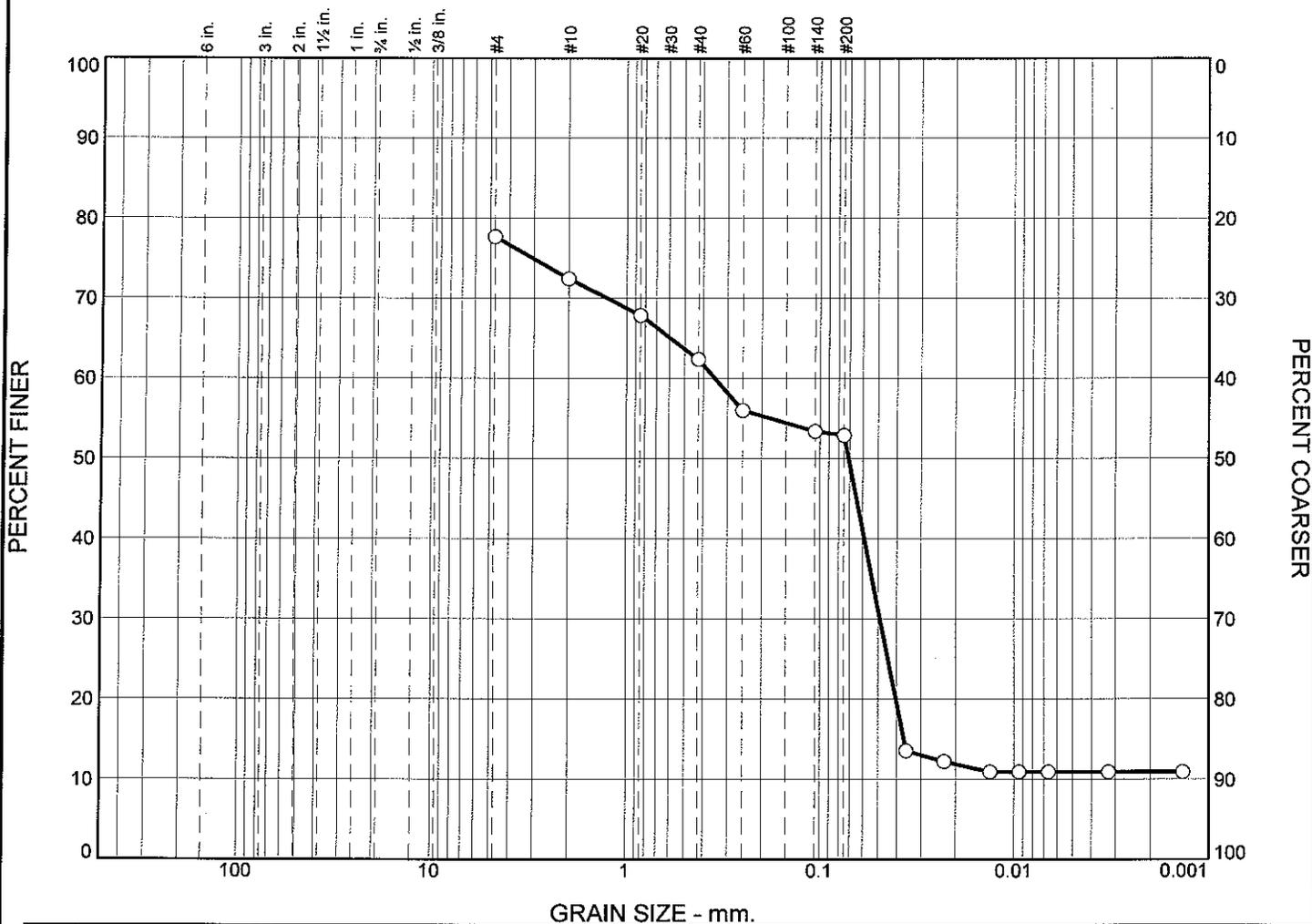
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 8.4      | 7.0     | 6.5  | 10.4 | 2.9  | 9.8     | 36.6  | 28.3 | 1.6  | 1.2  | 0.0     | 31.1  | 8.8  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0232          | 0.0377          | 0.0418          | 0.0512          | 0.1351          | 0.3894          | 2.6623          | 4.0197          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.93             | 16.81          | 0.29           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Gravel |      | Sand   |        |      | Fines |      |
|---|--------|------|--------|--------|------|-------|------|
|   | Coarse | Fine | Coarse | Medium | Fine | Silt  | Clay |
| ○ |        |      | 5.3    | 10.0   | 9.5  | 42.0  | 10.9 |

|   | LL | PL | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |
|---|----|----|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| ⊗ |    |    |                 | 0.3494          | 0.0711          | 0.0488          | 0.0368          |                 |                |                |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912920     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 507126     **Sample Number:** WG382312-1

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**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912920

Location: 507126

Sample Number: WG382312-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 34.65  
 Tare Wt. = 4.03  
 Minus #200 from wash = 52.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 64.10                       | 0.00         | #4                 | 535.12                  | 520.81               | 77.7          | 22.3             |
|                             |              | #10                | 485.38                  | 482.01               | 72.4          | 27.6             |
|                             |              | #20                | 413.89                  | 410.97               | 67.9          | 32.1             |
|                             |              | #40                | 381.40                  | 377.87               | 62.4          | 37.6             |
|                             |              | #60                | 373.89                  | 369.80               | 56.0          | 44.0             |
|                             |              | #140               | 348.80                  | 347.13               | 53.4          | 46.6             |
|                             |              | #200               | 346.78                  | 346.46               | 52.9          | 47.1             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 52.9

Weight of hydrometer sample = 64.10

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 13.5          | 86.5             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 12.2          | 87.8             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 10.9          | 89.1             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 10.9          | 89.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 10.9          | 89.1             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 10.9          | 89.1             |
| 1440.00             | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0014         | 10.9          | 89.1             |

## Fractional Components

| Cobbles | Gravel |      |       | Sand   |        |      |       | Fines |      |       |
|---------|--------|------|-------|--------|--------|------|-------|-------|------|-------|
|         | Coarse | Fine | Total | Coarse | Medium | Fine | Total | Silt  | Clay | Total |
|         |        |      |       | 5.3    | 10.0   | 9.5  | 24.8  | 42.0  | 10.9 | 52.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0368          | 0.0404          | 0.0488          | 0.0711          | 0.3494          |                 |                 |                 |                 |

| Fineness Modulus |
|------------------|
| 2.02             |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. NELAP Accredited.**

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. NELAP Accredited.**

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. NELAP Accredited via LA-DEQ.**

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. NELAP Accredited.**

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A, 3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D, 9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312, 3051, 6020, 747A, 7474, 9045C, 9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

02051016:32



# CHAIN OF CUSTODY

PAGE 11 OF 14

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 40912920

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

| ALPHA Lab ID (Lab Use Only) | Sample ID | Date    | Time  | Sample Matrix | Sampler's Initials | total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          | Sample Specific Comments | TOTAL # BOTTLES |
|-----------------------------|-----------|---------|-------|---------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------|
| 1                           | 506811    | 9/24/09 | 14:52 | SE            | SB                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs                   | 1               |
| 2                           | 506812    | 9/24/09 | 15:28 | SE            | SB                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs                   | 1               |
| 3                           | 506813    | 9/24/09 | 15:32 | SE            | SB                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs                   | 1               |
|                             | 506825    | 9/24/09 | 15:12 | SE            | SB                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem                 | 1               |
| 4                           | 506826    | 9/24/09 | 15:12 | SE            | SB                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs                   | 1               |
|                             | 506827    | 9/24/09 | 15:12 | SE            | SB                 | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch                 | 1               |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                     |               |                     |               |
|---------------------|---------------|---------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
| <i>James Bath</i>   | 9/24/09 9:10  | <i>Paul Gilbert</i> | 9/24/09       |
| <i>Paul Gilbert</i> | 9/25/09 9:15  | <i>Paul Gilbert</i> | 9/25/09 9:15  |
| <i>Paul Gilbert</i> | 9/25/09 10:35 | <i>Paul Gilbert</i> | 9/25/09 10:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE 12 OF 14

Date Rec'd in Lab:

ALPHA Job #: **20912920****Project Information**

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

**Turn-Around Time** Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
TEL: 508-898-9220 TEL: 508-822-9300  
FAX: 508-898-9193 FAX: 508-822-3288**Client Information**

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

 These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

**Report Information Data Deliverables** FAX  EMAIL  
 ADEX  Add'l Deliverables**Billing Information** Same as Client info PO #:**Regulatory Requirements/Report Limits**

State/Fed Program

Criteria

**ANALYSIS**

| total PCB congeners NOAA 18 | TOC                                 | grain size                          | archive                             |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-----------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                             |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|                             | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 5                              | 506911    | 9/24/09    | 13:38 | SE            | JB                 |
| 6                              | 506912    | 9/24/09    | 14:00 | SE            | JB                 |
| 7                              | 506913    | 9/24/09    | 14:15 | SE            | JB                 |
|                                | 506925    | 9/24/09    | 13:50 | SE            | JB                 |
| 8                              | 506926    | 9/24/09    | 13:50 | SE            | JB                 |
|                                | 506927    | 9/24/09    | 13:50 | SE            | JB                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                  |               |              |               |
|------------------|---------------|--------------|---------------|
| Relinquished By: | Date/Time     | Received By: | Date/Time     |
| James Bajek      | 9/24/09 19:11 | Paul Dilbert | 9/24/09       |
| Paul Dilbert     | 9/25/09 9:15  | James Bajek  | 9/25/09 9:15  |
| Paul Dilbert     | 9/25/09 10:35 | James Bajek  | 9/25/09 10:35 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

02051016:32



# CHAIN OF CUSTODY

PAGE 13 OF 14

Date Rec'd in Lab

ALPHA Job #: 20912920

**Project Information**

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

**Turn-Around Time** Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
TEL: 508-898-9220 TEL: 508-822-9300  
FAX: 508-898-9193 FAX: 508-822-3288**Client Information**

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

 These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

**Report Information Data Deliverables Billing Information** FAX  EMAIL  
 ADEX  Add'l Deliverables Same as Client info PO #:**Regulatory Requirements/Report Limits**

State/Fed Program

Criteria

**ANALYSIS**

| total PCB congeners NOAA 18 | TOC | grain size | archive |  |  |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |          |   |
|-----------------------------|-----|------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------|----------|---|
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed chem | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed arch | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|    |        |         |       |    |    |
|----|--------|---------|-------|----|----|
| 9  | 507011 | 9/24/09 | 12:11 | SE | JB |
| 10 | 507012 | 9/24/09 | 12:20 | SE | JB |
| 11 | 507013 | 9/24/09 | 11:35 | SE | JB |
|    | 507025 | 9/24/09 | 11:45 | SE | JB |
| 12 | 507026 | 9/24/09 | 11:45 | SE | JB |
|    | 507027 | 9/24/09 | 11:45 | SE | JB |
|    |        |         |       |    |    |
|    |        |         |       |    |    |
|    |        |         |       |    |    |
|    |        |         |       |    |    |
|    |        |         |       |    |    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                    |               |                    |               |
|--------------------|---------------|--------------------|---------------|
| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
| <i>James Bajek</i> | 9/24/09       | <i>Paul DeLuca</i> | 9/24/09       |
| <i>Paul DeLuca</i> | 9/25/09 9:15  | <i>Paul DeLuca</i> | 9/25/09 9:15  |
| <i>Paul DeLuca</i> | 9/25/09 10:35 | <i>Paul DeLuca</i> | 9/25/09 10:35 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912921  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/03/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

---

320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912921-01                | 507211           | NEW BEDFORD, MA            | 09/23/09 16:00                  |
| L0912921-02                | 507212           | NEW BEDFORD, MA            | 09/23/09 16:35                  |
| L0912921-03                | 507213           | NEW BEDFORD, MA            | 09/23/09 16:45                  |
| L0912921-04                | 507226           | NEW BEDFORD, MA            | 09/23/09 16:25                  |
| L0912921-05                | 507311           | NEW BEDFORD, MA            | 09/23/09 17:20                  |
| L0912921-06                | 507312           | NEW BEDFORD, MA            | 09/23/09 17:41                  |
| L0912921-07                | 507313           | NEW BEDFORD, MA            | 09/23/09 17:50                  |
| L0912921-08                | 507326           | NEW BEDFORD, MA            | 09/23/09 17:30                  |
| L0912921-09                | 507411           | NEW BEDFORD, MA            | 09/23/09 13:55                  |
| L0912921-10                | 507412           | NEW BEDFORD, MA            | 09/23/09 14:35                  |
| L0912921-11                | 507413           | NEW BEDFORD, MA            | 09/23/09 14:45                  |
| L0912921-12                | 507426           | NEW BEDFORD, MA            | 09/23/09 14:23                  |
| L0912921-13                | 507511           | NEW BEDFORD, MA            | 09/23/09 11:40                  |
| L0912921-14                | 507512           | NEW BEDFORD, MA            | 09/23/09 12:00                  |
| L0912921-15                | 507513           | NEW BEDFORD, MA            | 09/23/09 12:12                  |
| L0912921-16                | 507526           | NEW BEDFORD, MA            | 09/23/09 11:50                  |
| L0912921-17                | 507611           | NEW BEDFORD, MA            | 09/23/09 09:45                  |
| L0912921-18                | 507612           | NEW BEDFORD, MA            | 09/23/09 10:20                  |
| L0912921-19                | 507613           | NEW BEDFORD, MA            | 09/23/09 10:41                  |
| L0912921-20                | 507626           | NEW BEDFORD, MA            | 09/23/09 10:05                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

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### Report Submission

This report replaces the original report issued on October 21, 2009. The report was ammended to include revised Grain Size data.

### Grain Size

The WG382313-1 Laboratory Duplicate RPD is outside the acceptance criteria for % very coarse sand (40%). The elevated RPD has been attributed to the non-homogenous nature of the sample utilized for the laboratory

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

**Case Narrative (continued)**

duplicate.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/03/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-01  
**Client ID:** 507211  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.100  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 56.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-02  
**Client ID:** 507212  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:35  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.100  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.800  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 53.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-03  
**Client ID:** 507213  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:45  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 52.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 25.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-04  
**Client ID:** 507226  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 16:25  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.300  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 5.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 52.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-05  
**Client ID:** 507311  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:20  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.600  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 48.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 34.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-06  
**Client ID:** 507312  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:41  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.600  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 55.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-07  
**Client ID:** 507313  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:50  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 52.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 26.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-08  
**Client ID:** 507326  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 17:30  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 6.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 21.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 52.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 15.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-09  
**Client ID:** 507411  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 13:55  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 9.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 41.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 44.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-10  
**Client ID:** 507412  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 14:35  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 2.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 51.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 31.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-11  
**Client ID:** 507413  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 14:45  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.800  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 2.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 3.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 50.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 27.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-12  
**Client ID:** 507426  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 14:23  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 1.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 13.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 53.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 29.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-13  
**Client ID:** 507511  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 11:40  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 4.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 18.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 24.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 22.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 3.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-14  
**Client ID:** 507512  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 12:00  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 17.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 25.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 20.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 15.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 4.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-15  
**Client ID:** 507513  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 12:12  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.900  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 18.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 22.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 21.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 11.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 14.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-16  
**Client ID:** 507526  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 11:50  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 2.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 15.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 28.5   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 27.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 12.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-17  
**Client ID:** 507611  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 09:45  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.300  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.700  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.600  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 54.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 28.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-18  
**Client ID:** 507612  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 10:20  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.300  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.700  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 57.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 27.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-19  
**Client ID:** 507613  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 10:41  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.100  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 0.600  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 52.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 31.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### SAMPLE RESULTS

**Lab ID:** L0912921-20  
**Client ID:** 507626  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/23/09 10:05  
**Date Received:** 09/24/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | ND     |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.300  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 0.500  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 16.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 59.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 21.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912921

**Report Date:** 02/03/10

| Parameter  | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|--|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-20 QC Batch ID: WG382313-1 QC Sample: L0912921-12 Client ID: 507426 |               |                  |       |     |      |            |
| Gravel (>2.00mm)   | 0.2           | 0.200            | %     | 0   |      | 20         |
| Very Coarse Sand (1.00-2.00 mm)  | 0.3           | 0.200            | %     | 40  | Q    | 20         |
| Coarse Sand (0.50-1.00 mm)   | 0.5           | 0.600            | %     | 18  |      | 20         |
| Medium Sand (0.25-0.50 mm)   | 1.1           | 1.10             | %     | 0   |      | 20         |
| Fine Sand (0.125-0.25 mm)  | 1.8           | 2.00             | %     | 11  |      | 20         |
| Very Fine Sand (0.063-0.125 mm)  | 13.0          | 13.7             | %     | 5   |      | 20         |
| Silt - (1.95-62.5 um)  | 53.6          | 51.8             | %     | 3   |      | 20         |
| Clay - (<1.95 um)  | 29.5          | 30.4             | %     | 3   |      | 20         |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

### Sample Receipt and Container Information

Were project specific reporting limits specified? YES

#### Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| A      | Absent       |

#### Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912921-01A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-02A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-03A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-04A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-05A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-06A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-07A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-08A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses

Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912921

Report Date: 02/03/10

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912921-09A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-10A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-11A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-12A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-13A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-14A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-15A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-16A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-17A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-18A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912921

Report Date: 02/03/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912921-19A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912921-20A | Glass 250ml unpreserved | A      | N/A | 2          | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912921  
**Report Date:** 02/03/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507211

Sample Number: L0912921-01

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 6.68  
 Tare Wt. = 4.07  
 Minus #200 from wash = 94.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.94                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.82                  | 482.82               | 100.0         | 0.0              |
|                             |              | #20                | 404.00                  | 403.97               | 99.9          | 0.1              |
|                             |              | #40                | 376.73                  | 376.65               | 99.7          | 0.3              |
|                             |              | #60                | 368.92                  | 368.73               | 99.3          | 0.7              |
|                             |              | #140               | 343.51                  | 342.63               | 97.3          | 2.7              |
|                             |              | #200               | 329.08                  | 328.00               | 94.9          | 5.1              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 94.9

Weight of hydrometer sample = 43.94

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0150         | 1.0151            | 0.0135 | 12.0 | 13.1       | 0.0345         | 52.2          | 47.8             |
| 5.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0223         | 45.3          | 54.7             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 38.4          | 61.6             |
| 30.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0094         | 34.9          | 65.1             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0067         | 28.0          | 72.0             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 28.0          | 72.0             |
| 1440.00             | 21.0            | 1.0075         | 1.0076            | 0.0135 | 4.5  | 15.1       | 0.0014         | 26.2          | 73.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.1     | 0.1  | 0.5  | 1.6  | 12.9    | 15.2  | 34.3 | 9.8  | 9.6  | 3.1     | 56.8  | 28.0 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0074 | 0.0300 | 0.0398 | 0.0572 | 0.0627 | 0.0687 | 0.0765 |

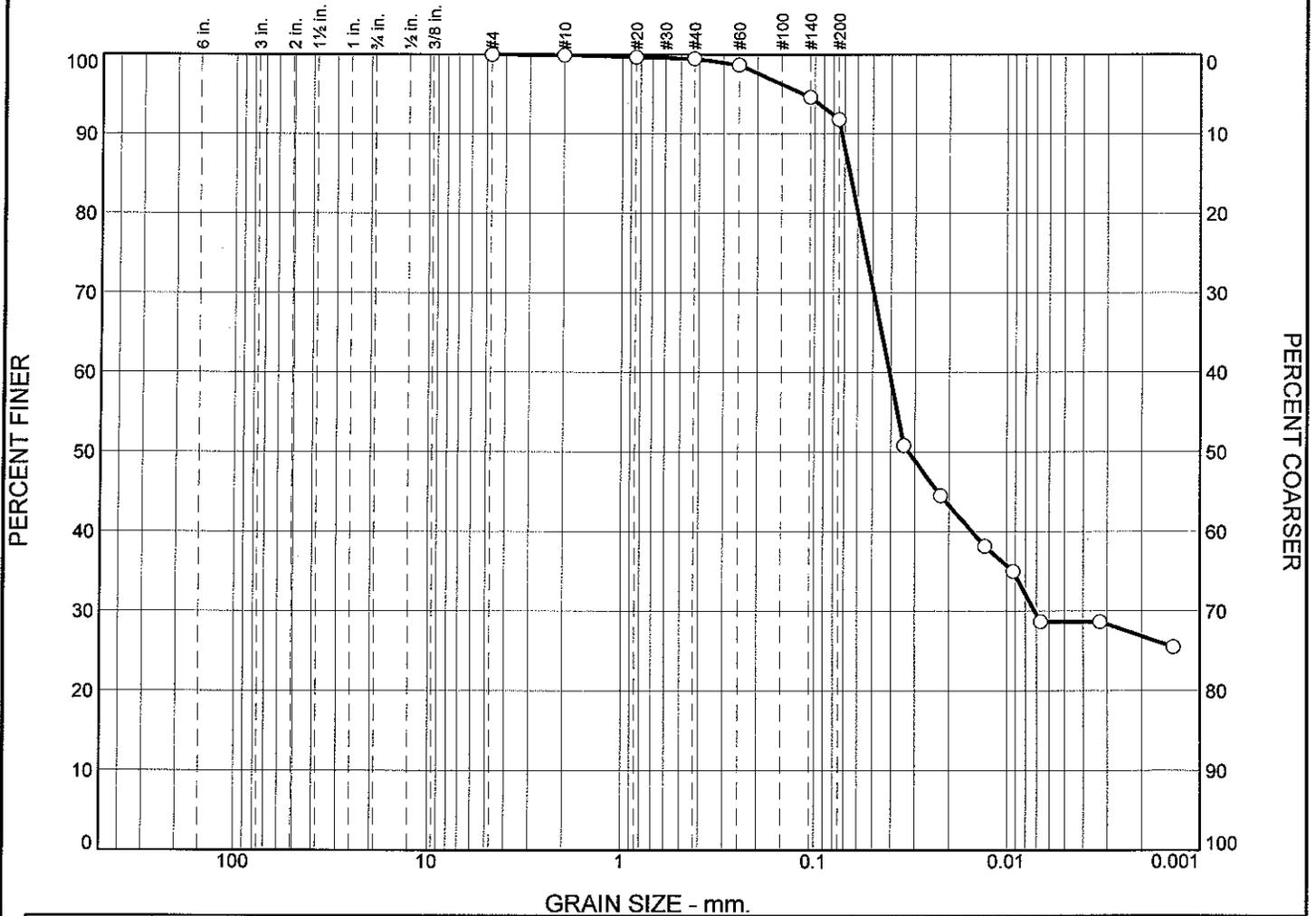
Fineness

Modulus

0.03

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0             | 0.1             | 0.2             | 0.2             | 0.8             | 3.3             | 13.1           | 32.9           | 9.1  | 8.6  | 3.0     | 28.7   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0658          | 0.0408          | 0.0323          | 0.0072          |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507212     <b>Sample Number:</b> L0912921-02</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507212  
 Sample Number: L0912921-02  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.22  
 Tare Wt. = 4.10  
 Minus #200 from wash = 91.2%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 46.66                       | 0.00         | #4                 | 511.64                  | 511.64               | 100.0         | 0.0              |
|                             |              | #10                | 481.64                  | 481.60               | 99.9          | 0.1              |
|                             |              | #20                | 407.25                  | 407.13               | 99.7          | 0.3              |
|                             |              | #40                | 375.76                  | 375.68               | 99.5          | 0.5              |
|                             |              | #60                | 372.80                  | 372.42               | 98.7          | 1.3              |
|                             |              | #140               | 351.10                  | 349.21               | 94.6          | 5.4              |
|                             |              | #200               | 316.01                  | 314.71               | 91.8          | 8.2              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 91.8  
 Weight of hydrometer sample = 46.66  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0160         | 1.0161            | 0.0135 | 13.0 | 12.9       | 0.0342         | 50.8          | 49.2             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0221         | 44.5          | 55.5             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0130         | 38.1          | 61.9             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 35.0          | 65.0             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 28.7          | 71.3             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 28.7          | 71.3             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 25.5          | 74.5             |

## Fractional Components

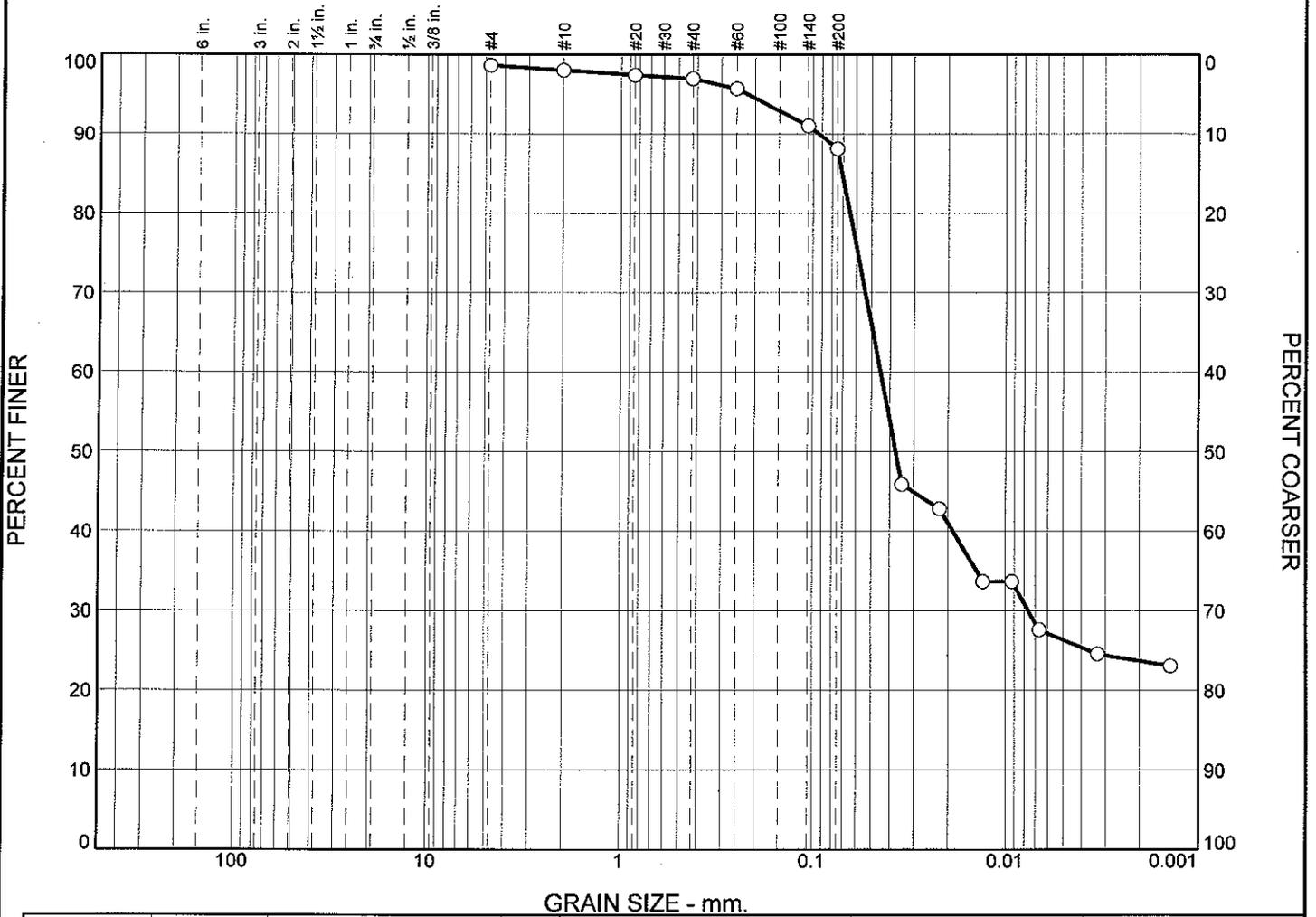
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.1      | 0.2     | 0.2  | 0.8  | 3.3  | 13.1    | 17.6  | 32.9 | 9.1  | 8.6  | 3.0     | 53.6  | 28.7 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0072          | 0.0323          | 0.0408          | 0.0598          | 0.0658          | 0.0724          | 0.1149          |

| Fineness Modulus |
|------------------|
| 0.06             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 0.5             | 0.5             | 0.4             | 1.4             | 3.8             | 13.7           | 33.1           | 8.4  | 6.2  | 5.2     | 25.3   |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.0708          | 0.0447          | 0.0372          | 0.0076          |                 |                 |                |                |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507213     <b>Sample Number:</b> L0912921-03</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507213

Sample Number: L0912921-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 10.19  
 Tare Wt. = 4.06  
 Minus #200 from wash = 86.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 46.50                       | 0.00         | #4                 | 514.83                  | 514.20               | 98.6          | 1.4              |
|                             |              | #10                | 483.10                  | 482.82               | 98.0          | 2.0              |
|                             |              | #20                | 404.26                  | 403.97               | 97.4          | 2.6              |
|                             |              | #40                | 376.86                  | 376.65               | 97.0          | 3.0              |
|                             |              | #60                | 369.32                  | 368.73               | 95.7          | 4.3              |
|                             |              | #140               | 344.80                  | 342.63               | 91.0          | 9.0              |
|                             |              | #200               | 329.35                  | 328.00               | 88.1          | 11.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 88.1

Weight of hydrometer sample = 46.50

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0150         | 1.0151            | 0.0135 | 12.0 | 13.1       | 0.0345         | 45.9          | 54.1             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0221         | 42.8          | 57.2             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 33.7          | 66.3             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 33.7          | 66.3             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 27.6          | 72.4             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 24.6          | 75.4             |
| 1440.00             | 21.0            | 1.0075         | 1.0076            | 0.0135 | 4.5  | 15.1       | 0.0014         | 23.0          | 77.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.5      | 0.5     | 0.4  | 1.4  | 3.8  | 13.7    | 19.8  | 33.1 | 8.4  | 6.2  | 5.2     | 52.9  | 25.3 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0076          | 0.0372          | 0.0447          | 0.0646          | 0.0708          | 0.0937          | 0.2199          |

Fineness Modulus

0.19

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507226

Sample Number: L0912921-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 12.89  
 Tare Wt. = 4.08  
 Minus #200 from wash = 86.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 65.38                       | 0.00         | #4                 | 511.64                  | 511.64               | 100.0         | 0.0              |
|                             |              | #10                | 481.63                  | 481.60               | 100.0         | 0.0              |
|                             |              | #20                | 407.32                  | 407.13               | 99.7          | 0.3              |
|                             |              | #40                | 375.93                  | 375.68               | 99.3          | 0.7              |
|                             |              | #60                | 373.49                  | 372.42               | 97.6          | 2.4              |
|                             |              | #140               | 353.71                  | 349.21               | 90.8          | 9.2              |
|                             |              | #200               | 316.77                  | 314.77               | 87.7          | 12.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 87.7

Weight of hydrometer sample = 46.66

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0180         | 1.0181            | 0.0135 | 15.0 | 12.3       | 0.0335         | 54.5          | 45.5             |
| 5.00                | 21.0            | 1.0150         | 1.0151            | 0.0135 | 12.0 | 13.1       | 0.0218         | 45.5          | 54.5             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0130         | 36.4          | 63.6             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 33.4          | 66.6             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0066         | 30.4          | 69.6             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 27.4          | 72.6             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 24.4          | 75.6             |

## Fractional Components

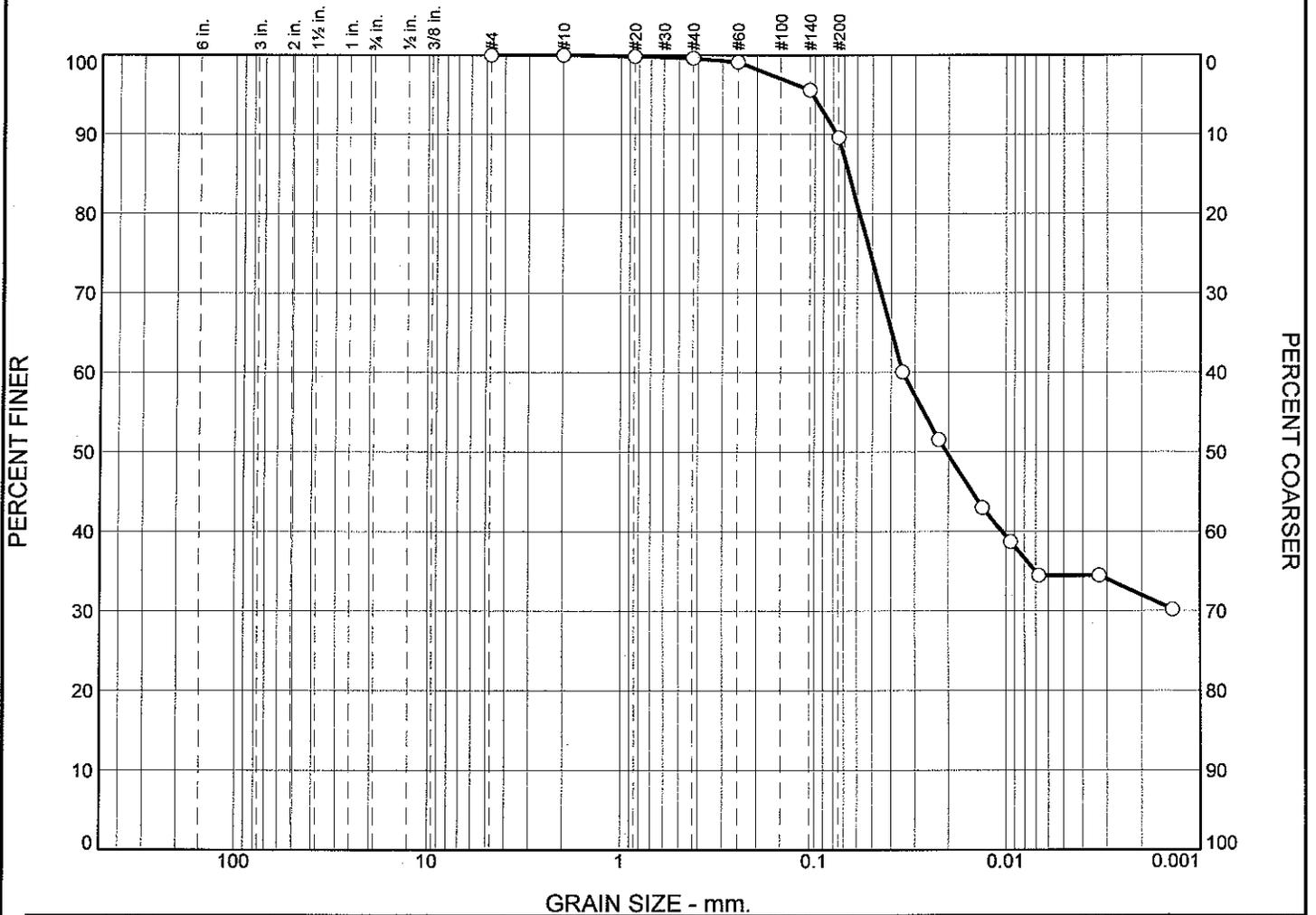
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.3     | 0.3  | 1.8  | 5.5  | 11.9    | 19.8  | 27.3 | 13.3 | 7.7  | 3.8     | 52.1  | 28.1 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0060 | 0.0270 | 0.0382 | 0.0622 | 0.0702 | 0.0973 | 0.1798 |

| Fineness Modulus |
|------------------|
| 0.09             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0             | 0.0             | 0.1             | 0.2             | 0.6             | 2.8             | 13.7           | 24.8           | 12.1 | 9.4  | 1.8     | 34.5   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0665          | 0.0347          | 0.0204          |                 |                 |                 |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507311    <b>Sample Number:</b> L0912921-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507311

Sample Number: L0912921-05

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.12  
 Tare Wt. = 3.99  
 Minus #200 from wash = 87.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 33.70                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.82                  | 482.82               | 100.0         | 0.0              |
|                             |              | #20                | 404.02                  | 403.97               | 99.9          | 0.1              |
|                             |              | #40                | 376.73                  | 376.65               | 99.6          | 0.4              |
|                             |              | #60                | 368.90                  | 368.73               | 99.1          | 0.9              |
|                             |              | #140               | 343.81                  | 342.63               | 95.6          | 4.4              |
|                             |              | #200               | 330.02                  | 328.00               | 89.6          | 10.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 89.6

Weight of hydrometer sample = 33.70

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 60.1          | 39.9             |
| 5.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0225         | 51.5          | 48.5             |
| 15.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0132         | 43.0          | 57.0             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 38.7          | 61.3             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0067         | 34.5          | 65.5             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 34.5          | 65.5             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0  | 15.2       | 0.0014         | 30.2          | 69.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.1     | 0.2  | 0.6  | 2.8  | 13.7    | 17.4  | 24.8 | 12.1 | 9.4  | 1.8     | 48.1  | 34.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 |                 | 0.0204          | 0.0347          | 0.0584          | 0.0665          | 0.0767          | 0.1023          |

| Fineness Modulus |
|------------------|
| 0.04             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507312

Sample Number: L0912921-06

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 10.02  
 Tare Wt. = 4.07  
 Minus #200 from wash = 86.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.61                       | 0.00         | #4                 | 511.64                  | 511.64               | 100.0         | 0.0              |
|                             |              | #10                | 481.60                  | 481.60               | 100.0         | 0.0              |
|                             |              | #20                | 407.21                  | 407.13               | 99.8          | 0.2              |
|                             |              | #40                | 375.76                  | 375.68               | 99.6          | 0.4              |
|                             |              | #60                | 372.65                  | 372.42               | 99.1          | 0.9              |
|                             |              | #140               | 372.65                  | 372.42               | 98.6          | 1.4              |
|                             |              | #200               | 351.21                  | 349.21               | 94.0          | 6.0              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 94.0

Weight of hydrometer sample = 43.61

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0150         | 1.0151            | 0.0135 | 12.0 | 13.1       | 0.0345         | 52.2          | 47.8             |
| 5.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0225         | 41.8          | 58.2             |
| 15.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0131         | 38.3          | 61.7             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 31.4          | 68.6             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 31.4          | 68.6             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 27.9          | 72.1             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0  | 15.2       | 0.0014         | 24.5          | 75.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.1     | 0.2  | 0.6  | 0.4  | 14.5    | 15.8  | 34.6 | 10.2 | 8.0  | 2.6     | 55.4  | 28.8 |

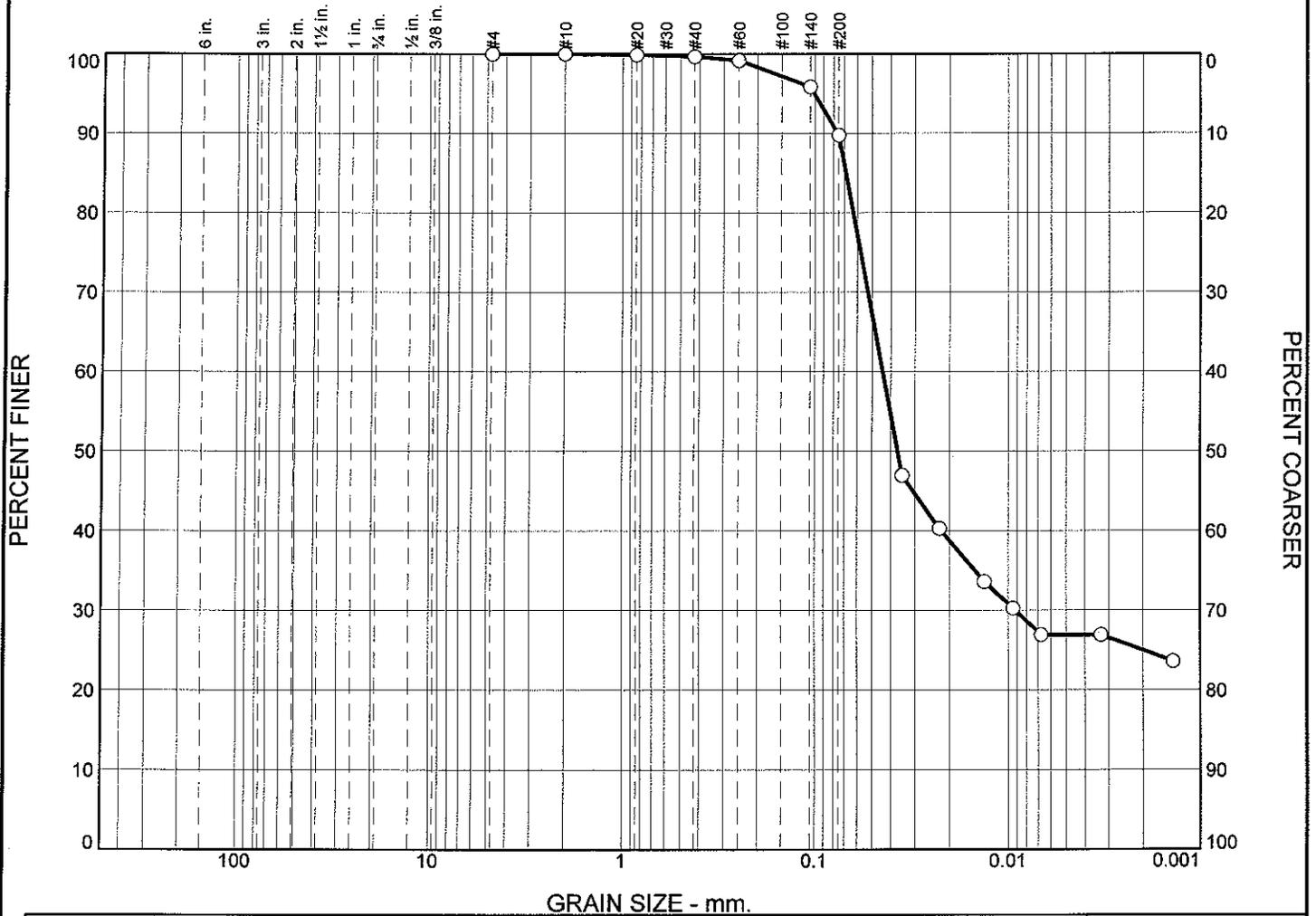
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0050          | 0.0316          | 0.0399          | 0.0579          | 0.0635          | 0.0696          | 0.0809          |

Fineness Modulus

0.02

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|------|------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.0       | 0.0        | 0.1     | 0.2    | 0.5  | 2.7  | 16.9           | 34.5           | 9.4  | 7.3  | 1.5     | 26.9   |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.0689    | 0.0440     | 0.0368  | 0.0092 |      |      |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 507313    <b>Sample Number:</b> L0912921-07</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507313

Sample Number: L0912921-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 9.00  
 Tare Wt. = 4.03  
 Minus #200 from wash = 88.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.20                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.82                  | 482.82               | 100.0         | 0.0              |
|                             |              | #20                | 404.02                  | 403.97               | 99.9          | 0.1              |
|                             |              | #40                | 376.74                  | 376.65               | 99.7          | 0.3              |
|                             |              | #60                | 368.95                  | 368.73               | 99.2          | 0.8              |
|                             |              | #140               | 344.06                  | 342.63               | 95.9          | 4.1              |
|                             |              | #200               | 330.64                  | 328.00               | 89.7          | 10.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 89.7

Weight of hydrometer sample = 43.20

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 46.9          | 53.1             |
| 5.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0225         | 40.3          | 59.7             |
| 15.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0132         | 33.6          | 66.4             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 30.3          | 69.7             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0067         | 26.9          | 73.1             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 26.9          | 73.1             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0  | 15.2       | 0.0014         | 23.6          | 76.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.1     | 0.2  | 0.5  | 2.7  | 16.9    | 20.4  | 34.5 | 9.4  | 7.3  | 1.5     | 52.7  | 26.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0092          | 0.0368          | 0.0440          | 0.0630          | 0.0689          | 0.0761          | 0.1010          |

Fineness Modulus

0.04

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507326

Sample Number: L0912921-08

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 22.93  
 Tare Wt. = 4.14  
 Minus #200 from wash = 75.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 77.40                       | 0.00         | #4                 | 513.42                  | 511.64               | 97.7          | 2.3              |
|                             |              | #10                | 482.01                  | 481.60               | 97.2          | 2.8              |
|                             |              | #20                | 407.47                  | 407.13               | 96.7          | 3.3              |
|                             |              | #40                | 376.14                  | 375.68               | 96.1          | 3.9              |
|                             |              | #60                | 373.31                  | 372.42               | 95.0          | 5.0              |
|                             |              | #140               | 355.62                  | 349.21               | 86.7          | 13.3             |
|                             |              | #200               | 321.21                  | 314.77               | 78.4          | 21.6             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 78.4

Weight of hydrometer sample = 77.40

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0180         | 1.0181            | 0.0135 | 15.0 | 12.3       | 0.0335         | 29.4          | 70.6             |
| 5.00                | 21.0            | 1.0160         | 1.0161            | 0.0135 | 13.0 | 12.9       | 0.0216         | 26.1          | 73.9             |
| 15.00               | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0129         | 21.3          | 78.7             |
| 30.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0092         | 19.6          | 80.4             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0066         | 16.4          | 83.6             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 14.7          | 85.3             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 13.1          | 86.9             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 0.4     | 0.5  | 1.3  | 6.7  | 21.0    | 29.9  | 38.5 | 5.7  | 5.1  | 2.8     | 52.1  | 15.2 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 | 0.0036          | 0.0099          | 0.0338          | 0.0470          | 0.0554          | 0.0802          | 0.0987          | 0.1491          | 0.2515          |

|                  |
|------------------|
| Fineness Modulus |
| 0.26             |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507411  
 Sample Number: L0912921-09  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 6.56  
 Tare Wt. = 4.10  
 Minus #200 from wash = 90.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 26.71                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.82                  | 482.82               | 100.0         | 0.0              |
|                             |              | #20                | 404.05                  | 403.97               | 99.7          | 0.3              |
|                             |              | #40                | 376.80                  | 376.65               | 99.1          | 0.9              |
|                             |              | #60                | 368.95                  | 368.73               | 98.3          | 1.7              |
|                             |              | #140               | 343.28                  | 342.63               | 95.9          | 4.1              |
|                             |              | #200               | 328.87                  | 328.00               | 92.6          | 7.4              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 92.6  
 Weight of hydrometer sample = 26.71  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0 | 13.9       | 0.0355         | 67.2          | 32.8             |
| 5.00                | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0 | 14.4       | 0.0229         | 56.1          | 43.9             |
| 15.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0133         | 50.5          | 49.5             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 44.9          | 55.1             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 44.9          | 55.1             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0033         | 44.9          | 55.1             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0014         | 44.9          | 55.1             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.2     | 0.5  | 1.0  | 2.0  | 9.9     | 13.6  | 22.7 | 11.6 | 7.2  |         | 41.5  | 44.9 |

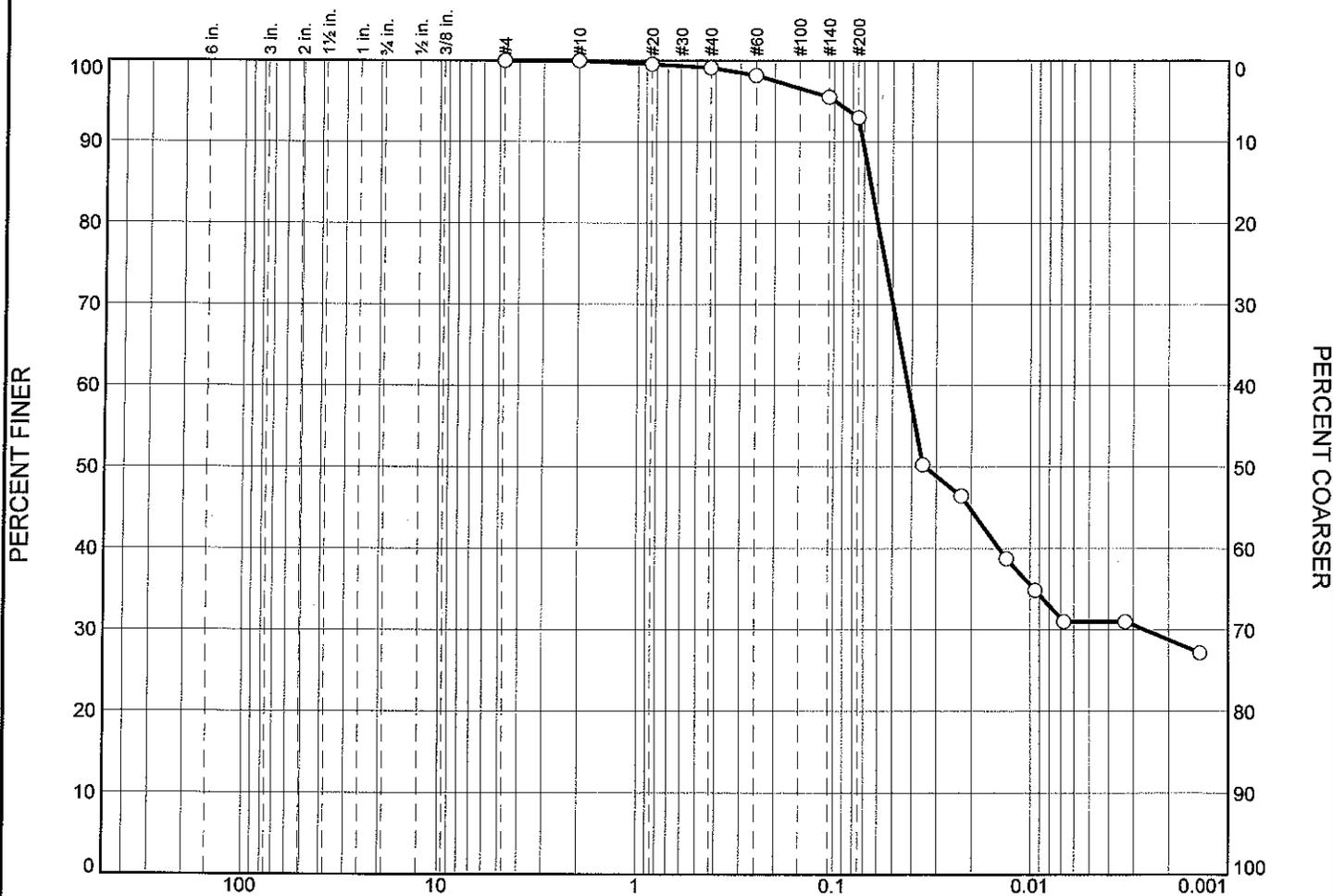
| D10 | D15 | D20 | D30 | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|-----|--------|--------|--------|--------|--------|--------|
|     |     |     |     | 0.0129 | 0.0267 | 0.0518 | 0.0599 | 0.0694 | 0.0965 |

Fineness Modulus

0.05

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |      |      |      |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|------|------|------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0       | 0.0        | 0.4     | 0.4  | 1.0  | 2.2  | 13.3    | 33.5   | 8.1  | 8.4  | 1.7     | 31.0   |

| ⊗ | LL | PL | D85    | D60    | D50    | D30    | D15 | D10 | Cc | Cu |
|---|----|----|--------|--------|--------|--------|-----|-----|----|----|
| ○ |    |    | 0.0651 | 0.0418 | 0.0341 | 0.0026 |     |     |    |    |

| ○ | Material Description | USCS | AASHTO |
|---|----------------------|------|--------|
|   |                      |      |        |

|  |  |
|--|--|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 507412    <b>Sample Number:</b> L0912921-10</p> <p style="text-align: center;"><b>Alpha Analytical</b></p> <p style="text-align: center;"><b>Mansfield, MA</b></p> | <p><b>Remarks:</b></p><br><br><br><br><br><p style="text-align: center;"><b>Figure</b></p> |
|--|--|

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507412

Sample Number: L0912921-10

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 7.30  
 Tare Wt. = 4.04  
 Minus #200 from wash = 91.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 38.82                       | 0.00         | #4                 | 511.64                  | 511.64               | 100.0         | 0.0              |
|                             |              | #10                | 481.60                  | 481.60               | 100.0         | 0.0              |
|                             |              | #20                | 407.30                  | 407.13               | 99.6          | 0.4              |
|                             |              | #40                | 375.85                  | 375.68               | 99.1          | 0.9              |
|                             |              | #60                | 372.79                  | 372.42               | 98.2          | 1.8              |
|                             |              | #140               | 350.24                  | 349.21               | 95.5          | 4.5              |
|                             |              | #200               | 315.75                  | 314.77               | 93.0          | 7.0              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 93.0

Weight of hydrometer sample = 38.82

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0352         | 50.3          | 49.7             |
| 5.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0225         | 46.4          | 53.6             |
| 15.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0132         | 38.7          | 61.3             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 34.9          | 65.1             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0067         | 31.0          | 69.0             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 31.0          | 69.0             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0  | 15.2       | 0.0014         | 27.2          | 72.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.4     | 0.4  | 1.0  | 2.2  | 13.3    | 17.3  | 33.5 | 8.1  | 8.4  | 1.7     | 51.7  | 31.0 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0026          | 0.0341          | 0.0418          | 0.0596          | 0.0651          | 0.0711          | 0.0987          |

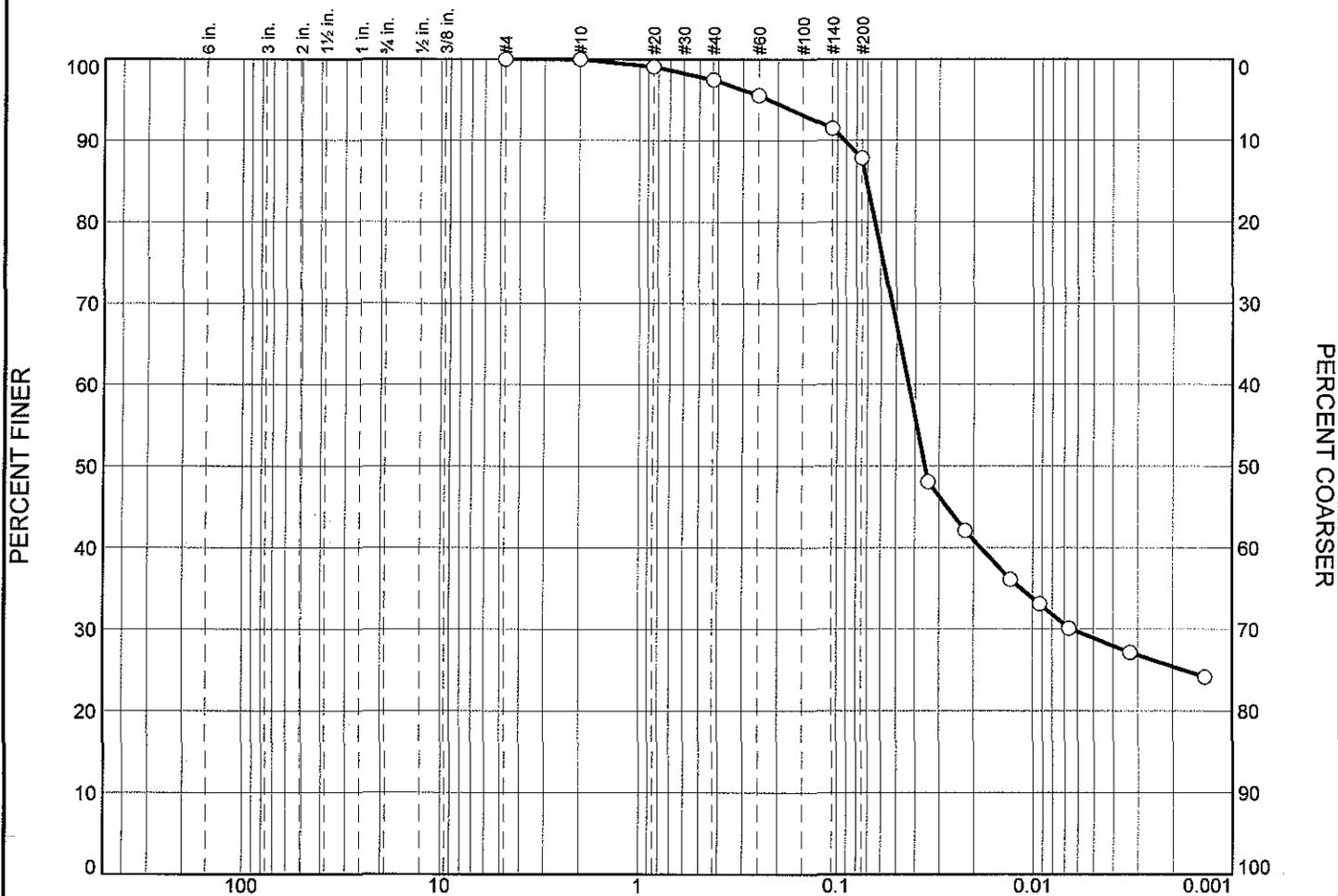
Fineness

Modulus

0.06

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |      |                 | % Silt |                |                |         | % Clay |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|------|-----------------|--------|----------------|----------------|---------|--------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine | V. Fine         | Crs.   | Med.           | Fine           | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0             | 0.0             | 0.8             | 1.4             | 2.2             | 3.3  | 13.7            | 31.9   | 8.5            | 6.6            | 3.7     | 27.9   |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> |      | D <sub>10</sub> |        | C <sub>c</sub> | C <sub>u</sub> |         |        |
| ○ |            |           | 0.0709          | 0.0433          | 0.0355          | 0.0064          |                 |      |                 |        |                |                |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507413    <b>Sample Number:</b> L0912921-11</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507413

Sample Number: L0912921-11

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 9.84  
 Tare Wt. = 4.10  
 Minus #200 from wash = 85.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 40.80                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.82                  | 482.82               | 100.0         | 0.0              |
|                             |              | #20                | 404.35                  | 403.97               | 99.1          | 0.9              |
|                             |              | #40                | 377.30                  | 376.65               | 97.5          | 2.5              |
|                             |              | #60                | 369.51                  | 368.73               | 95.6          | 4.4              |
|                             |              | #140               | 344.29                  | 342.63               | 91.5          | 8.5              |
|                             |              | #200               | 329.50                  | 328.00               | 87.8          | 12.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 87.8

Weight of hydrometer sample = 47.14

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0160         | 1.0161            | 0.0135 | 13.0 | 12.9       | 0.0342         | 48.1          | 51.9             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0221         | 42.1          | 57.9             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0130         | 36.1          | 63.9             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 33.1          | 66.9             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0066         | 30.1          | 69.9             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 27.1          | 72.9             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 24.1          | 75.9             |

## Fractional Components

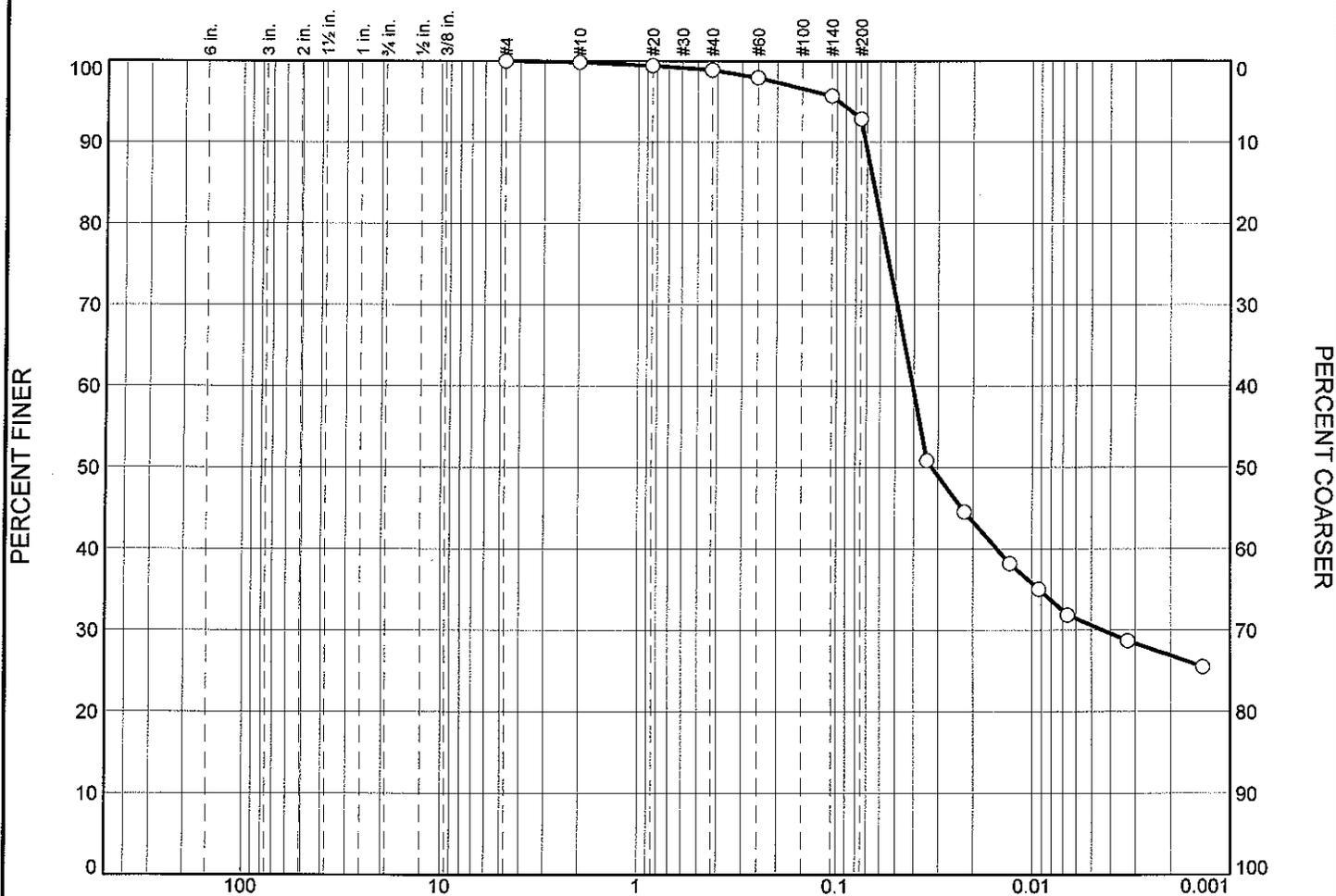
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.8     | 1.4  | 2.2  | 3.3  | 13.7    | 21.4  | 31.9 | 8.5  | 6.6  | 3.7     | 50.7  | 27.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0064          | 0.0355          | 0.0433          | 0.0643          | 0.0709          | 0.0921          | 0.2220          |

| Fineness Modulus |
|------------------|
| 0.13             |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Gravel        | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.0             | 0.2             | 0.3             | 0.5             | 1.1             | 1.8             | 13.0           | 33.7           | 9.0  | 7.0  | 3.9     | 29.5   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.0647          | 0.0406          | 0.0322          | 0.0044          |                 |                 |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 507426    <b>Sample Number:</b> L0912921-12</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507426  
 Sample Number: L0912921-12  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 8.30  
 Tare Wt. = 4.11  
 Minus #200 from wash = 91.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 47.14                       | 0.00         | #4                 | 511.64                  | 511.64               | 100.0         | 0.0              |
|                             |              | #10                | 481.68                  | 481.60               | 99.8          | 0.2              |
|                             |              | #20                | 407.32                  | 407.13               | 99.4          | 0.6              |
|                             |              | #40                | 375.93                  | 375.68               | 98.9          | 1.1              |
|                             |              | #60                | 372.87                  | 372.42               | 97.9          | 2.1              |
|                             |              | #140               | 350.27                  | 349.21               | 95.7          | 4.3              |
|                             |              | #200               | 316.10                  | 314.77               | 92.9          | 7.1              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 92.9  
 Weight of hydrometer sample = 47.14  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0160         | 1.0161            | 0.0135 | 13.0 | 12.9       | 0.0342         | 50.8          | 49.2             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0221         | 44.5          | 55.5             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0130         | 38.2          | 61.8             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 35.0          | 65.0             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0066         | 31.9          | 68.1             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 28.7          | 71.3             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 25.5          | 74.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.2      | 0.3     | 0.5  | 1.1  | 1.8  | 13.0    | 16.7  | 33.7 | 9.0  | 7.0  | 3.9     | 53.6  | 29.5 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0044          | 0.0322          | 0.0406          | 0.0590          | 0.0647          | 0.0711          | 0.0974          |

Fineness Modulus

0.07

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507426

Sample Number: WG382313-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 7.94  
 Tare Wt. = 4.10  
 Minus #200 from wash = 91.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 45.41                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.89                  | 482.82               | 99.8          | 0.2              |
|                             |              | #20                | 404.13                  | 403.97               | 99.5          | 0.5              |
|                             |              | #40                | 376.94                  | 376.65               | 98.9          | 1.1              |
|                             |              | #60                | 369.18                  | 368.73               | 97.9          | 2.1              |
|                             |              | #140               | 343.72                  | 342.63               | 95.5          | 4.5              |
|                             |              | #200               | 329.42                  | 328.00               | 92.3          | 7.7              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 92.3  
 Weight of hydrometer sample = 45.41  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0150         | 1.0151            | 0.0135 | 12.0 | 13.1       | 0.0345         | 49.2          | 50.8             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0221         | 45.9          | 54.1             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0130         | 39.4          | 60.6             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 36.1          | 63.9             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0066         | 32.9          | 67.1             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 29.6          | 70.4             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 26.3          | 73.7             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.2      | 0.2     | 0.6  | 1.1  | 2.0  | 13.7    | 17.6  | 33.8 | 6.7  | 7.2  | 4.1     | 51.8  | 30.4 |

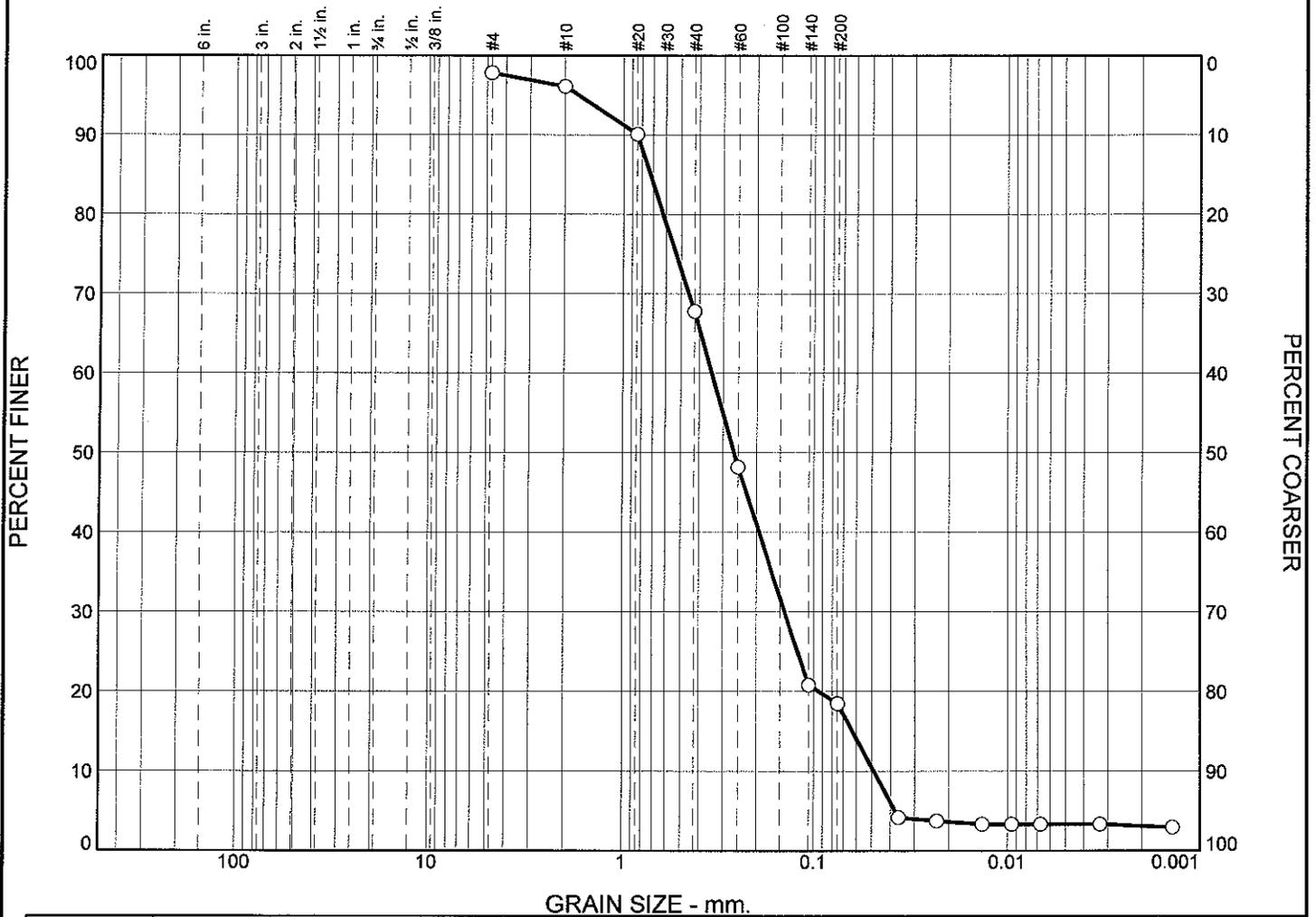
| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0036          | 0.0350          | 0.0419          | 0.0601          | 0.0657          | 0.0719          | 0.1007          |

Fineness Modulus

0.07

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ |            |           |                 | 1.4             | 4.9             | 18.2            | 24.8            | 22.1            | 11.2           | 10.9           | 0.5  | 0.2  | 0.0     | 3.3    |  |
| X | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.7256          | 0.3443          | 0.2625          | 0.1414          | 0.0628          | 0.0487          | 1.19           | 7.07           |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507511     <b>Sample Number:</b> L0912921-13</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507511

Sample Number: L0912921-13

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 62.78  
 Tare Wt. = 4.16  
 Minus #200 from wash = 18.1%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 71.60                       | 0.00         | #4                 | 513.22                  | 511.64               | 97.8          | 2.2              |
|                             |              | #10                | 482.81                  | 481.60               | 96.1          | 3.9              |
|                             |              | #20                | 411.43                  | 407.13               | 90.1          | 9.9              |
|                             |              | #40                | 391.67                  | 375.68               | 67.8          | 32.2             |
|                             |              | #60                | 386.43                  | 372.42               | 48.2          | 51.8             |
|                             |              | #140               | 368.83                  | 349.21               | 20.8          | 79.2             |
|                             |              | #200               | 316.43                  | 314.77               | 18.5          | 81.5             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 18.5

Weight of hydrometer sample = 71.60

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0 | 14.4       | 0.0362         | 4.2           | 95.8             |
| 5.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0231         | 3.8           | 96.2             |
| 15.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0135         | 3.3           | 96.7             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 3.3           | 96.7             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 3.3           | 96.7             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0033         | 3.3           | 96.7             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 2.9           | 97.1             |

## Fractional Components

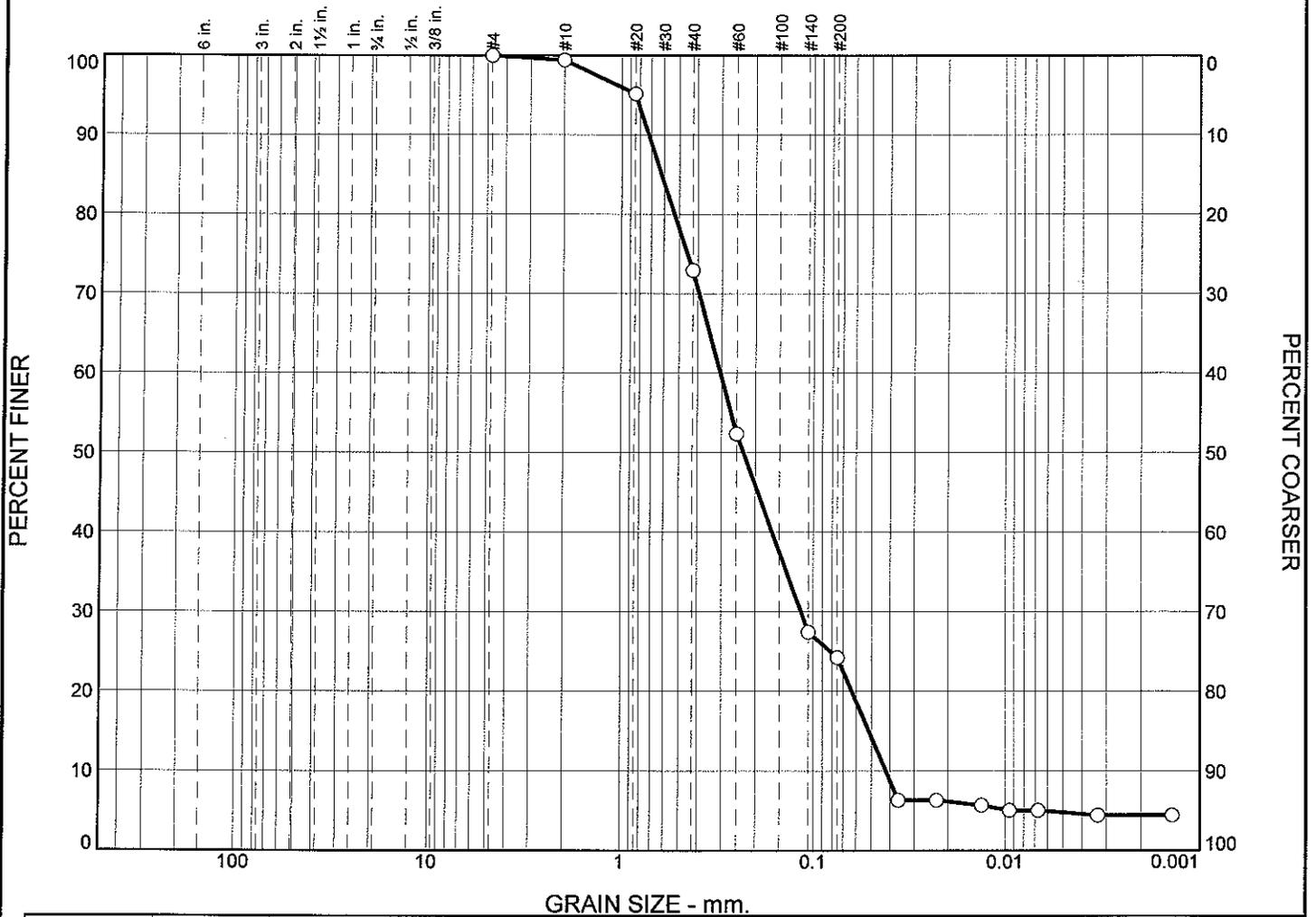
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.4      | 4.9     | 18.2 | 24.8 | 22.1 | 11.2    | 81.2  | 10.9 | 0.5  | 0.2  | 0.0     | 11.6  | 3.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0487          | 0.0628          | 0.0941          | 0.1414          | 0.2625          | 0.3443          | 0.6213          | 0.7256          | 0.8474          | 1.7091          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.48             | 7.07           | 1.19           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| ○ | 0.0        | 0.0       | 0.1             | 0.5             | 3.4             | 17.9            | 25.7            | 20.2            | 12.5           | 13.4           | 0.4  | 0.8  | 0.5     | 4.6    |  |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| ○ |            |           | 0.6193          | 0.3045          | 0.2305          | 0.1157          | 0.0515          | 0.0421          | 1.05           | 7.24           |      |      |         |        |  |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507512    <b>Sample Number:</b> L0912921-14</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507512  
 Sample Number: L0912921-14  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 51.17  
 Tare Wt. = 4.01  
 Minus #200 from wash = 23.9%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 62.00                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 483.19                  | 482.82               | 99.4          | 0.6              |
|                             |              | #20                | 406.61                  | 403.97               | 95.1          | 4.9              |
|                             |              | #40                | 390.42                  | 376.65               | 72.9          | 27.1             |
|                             |              | #60                | 381.49                  | 368.73               | 52.4          | 47.6             |
|                             |              | #140               | 358.07                  | 342.63               | 27.5          | 72.5             |
|                             |              | #200               | 330.00                  | 328.00               | 24.2          | 75.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 24.2  
 Weight of hydrometer sample = 62.00  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0 | 14.4       | 0.0362         | 6.3           | 93.7             |
| 5.00                | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0 | 14.4       | 0.0229         | 6.3           | 93.7             |
| 15.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0133         | 5.7           | 94.3             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 5.1           | 94.9             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 5.1           | 94.9             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 4.4           | 95.6             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 4.4           | 95.6             |

## Fractional Components

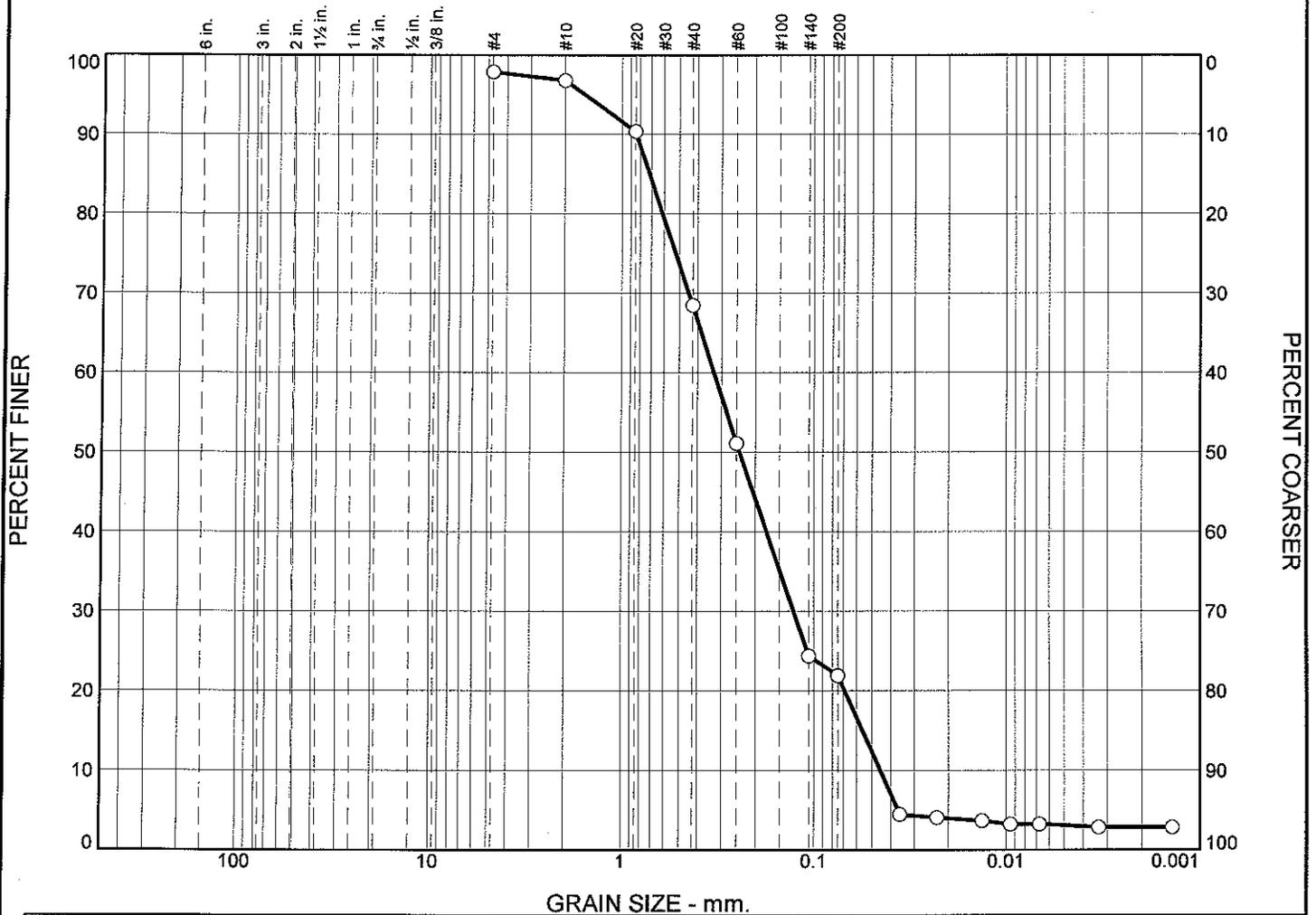
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.5      | 3.4     | 17.9 | 25.7 | 20.2 | 12.5    | 79.7  | 13.4 | 0.4  | 0.8  | 0.5     | 15.1  | 4.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0421          | 0.0515          | 0.0632          | 0.1157          | 0.2305          | 0.3045          | 0.5298          | 0.6193          | 0.7239          | 0.8462          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.23             | 7.24           | 1.05           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         | Silt |      |      |         | Clay |
|---|----------|---------|---------|----------|---------|------|------|------|---------|------|------|------|---------|------|
|   |          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Crs. | Med. | Fine | V. Fine |      |
| 0 |          |         |         | 0.9      | 5.2     | 18.0 | 22.5 | 21.6 | 11.9    | 13.3 | 0.5  | 0.5  | 0.4     | 2.9  |

| LL | PL | D85    | D60    | D50    | D30    | D15    | D10    | Cc   | Cu   |
|----|----|--------|--------|--------|--------|--------|--------|------|------|
| 0  |    | 0.7171 | 0.3283 | 0.2415 | 0.1270 | 0.0560 | 0.0454 | 1.08 | 7.24 |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| 0                    |      |        |

**Project No.** L0912921    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Source of Sample:** 507513    **Sample Number:** L0912921-15  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
  
**Figure**

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507513  
 Sample Number: L0912921-15  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 72.68  
 Tare Wt. = 4.09  
 Minus #200 from wash = 21.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 87.26                       | 0.00         | #4                 | 513.49                  | 511.64               | 97.9          | 2.1              |
|                             |              | #10                | 482.54                  | 481.60               | 96.8          | 3.2              |
|                             |              | #20                | 412.74                  | 407.13               | 90.4          | 9.6              |
|                             |              | #40                | 394.80                  | 375.68               | 68.5          | 31.5             |
|                             |              | #60                | 387.59                  | 372.42               | 51.1          | 48.9             |
|                             |              | #140               | 372.52                  | 349.21               | 24.4          | 75.6             |
|                             |              | #200               | 316.92                  | 314.77               | 21.9          | 78.1             |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 21.9  
 Weight of hydrometer sample = 87.26  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0 | 14.2       | 0.0359         | 4.5           | 95.5             |
| 5.00                | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0 | 14.4       | 0.0229         | 4.1           | 95.9             |
| 15.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0133         | 3.7           | 96.3             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 3.3           | 96.7             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 3.3           | 96.7             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 2.8           | 97.2             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 2.8           | 97.2             |

**Fractional Components**

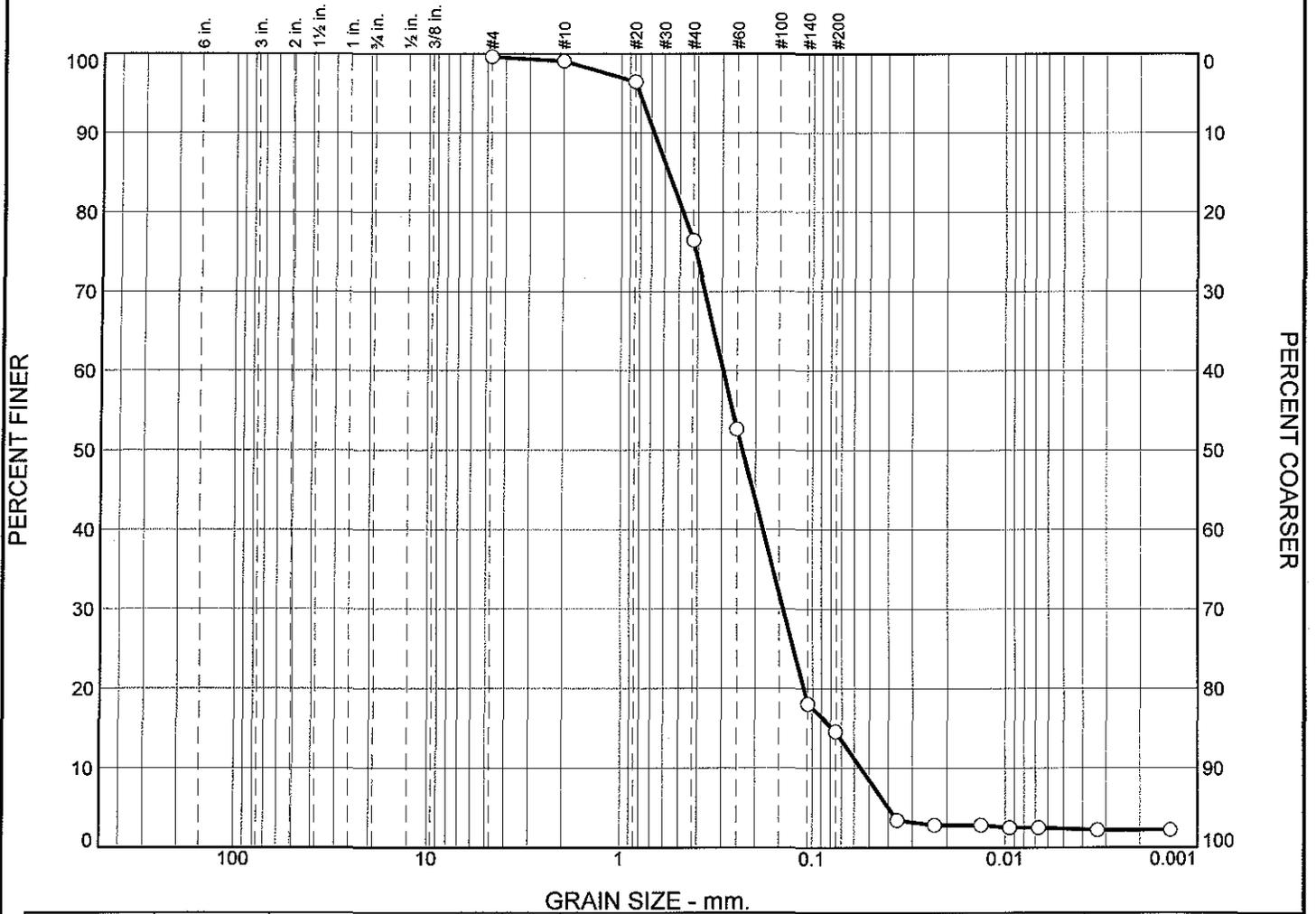
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.9      | 5.2     | 18.0 | 22.5 | 21.6 | 11.9    | 79.2  | 13.3 | 0.5  | 0.5  | 0.4     | 14.7  | 2.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0454          | 0.0560          | 0.0692          | 0.1270          | 0.2415          | 0.3283          | 0.6122          | 0.7171          | 0.8400          | 1.5734          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.41             | 7.24           | 1.08           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 | % Silt         |                |      |      | % Clay |         |
|---|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|--------|---------|
|   |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine |        | V. Fine |
| ○ |            |           |                 | 0.4             | 2.1             | 15.9            | 28.5            | 27.9            | 12.9           | 8.5            | 0.5  | 0.3  | 0.2    | 2.3     |
| ⊗ | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |        |         |
| ○ |            |           | 0.5715          | 0.2946          | 0.2342          | 0.1425          | 0.0782          | 0.0554          | 1.24           | 5.32           |      |      |        |         |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507526    <b>Sample Number:</b> L0912921-16</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507526  
 Sample Number: L0912921-16  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 68.44  
 Tare Wt. = 4.04  
 Minus #200 from wash = 14.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 74.91                       | 0.00         | #4                 | 514.49                  | 514.20               | 99.6          | 0.4              |
|                             |              | #10                | 483.23                  | 482.82               | 99.1          | 0.9              |
|                             |              | #20                | 405.92                  | 403.97               | 96.5          | 3.5              |
|                             |              | #40                | 391.64                  | 376.65               | 76.5          | 23.5             |
|                             |              | #60                | 386.57                  | 368.73               | 52.6          | 47.4             |
|                             |              | #140               | 368.51                  | 342.63               | 18.1          | 81.9             |
|                             |              | #200               | 330.63                  | 328.00               | 14.6          | 85.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 14.6  
 Weight of hydrometer sample = 74.91  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0 | 14.2       | 0.0359         | 3.5           | 96.5             |
| 5.00                | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0231         | 2.8           | 97.2             |
| 15.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0 | 14.7       | 0.0133         | 2.8           | 97.2             |
| 30.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0095         | 2.5           | 97.5             |
| 60.00               | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0 | 15.0       | 0.0067         | 2.5           | 97.5             |
| 250.00              | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0033         | 2.2           | 97.8             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0 | 15.2       | 0.0014         | 2.2           | 97.8             |

## Fractional Components

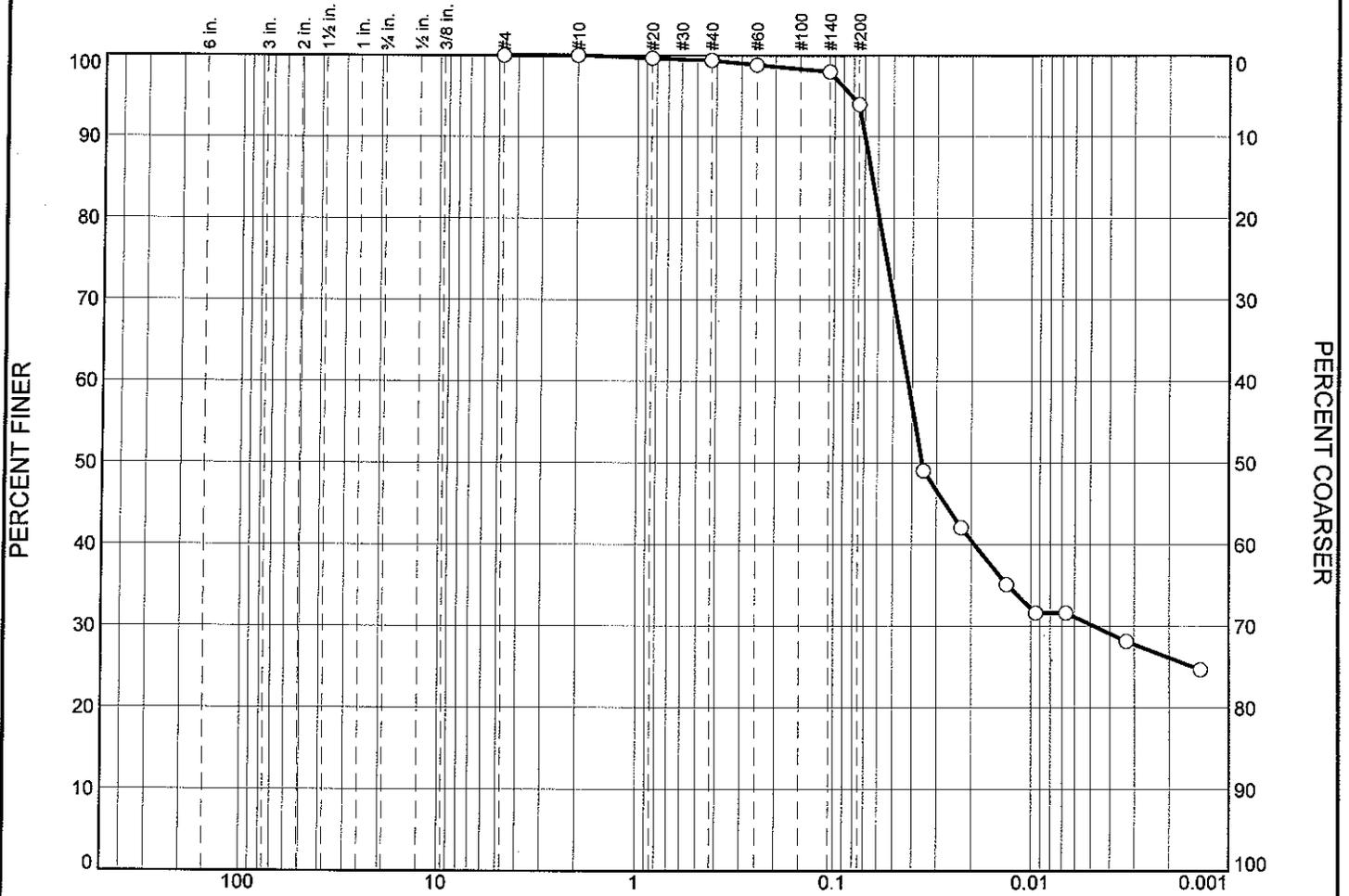
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Grs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 2.1     | 15.9 | 28.5 | 27.9 | 12.9    | 87.3  | 8.5  | 0.5  | 0.3  | 0.2     | 9.5   | 2.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0554          | 0.0782          | 0.1112          | 0.1425          | 0.2342          | 0.2946          | 0.4806          | 0.5715          | 0.6795          | 0.8080          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 1.24             | 5.32           | 1.24           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.0             | 0.0             | 0.3             | 0.2             | 0.7             | 0.6             | 14.9           | 36.1           | 9.9  | 5.7  | 2.7     | 28.9   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.0644          | 0.0420          | 0.0354          | 0.0048          |                 |                 |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><b>Source of Sample:</b> 507611    <b>Sample Number:</b> L0912921-17</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507611  
 Sample Number: L0912921-17  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 7.18  
 Tare Wt. = 3.94  
 Minus #200 from wash = 92.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 43.30                       | 0.00         | #4                 | 511.64                  | 511.64               | 100.0         | 0.0              |
|                             |              | #10                | 481.60                  | 481.60               | 100.0         | 0.0              |
|                             |              | #20                | 407.28                  | 407.13               | 99.7          | 0.3              |
|                             |              | #40                | 375.79                  | 375.68               | 99.4          | 0.6              |
|                             |              | #60                | 372.67                  | 372.42               | 98.8          | 1.2              |
|                             |              | #140               | 349.57                  | 349.21               | 98.0          | 2.0              |
|                             |              | #200               | 316.51                  | 314.77               | 94.0          | 6.0              |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 94.0  
 Weight of hydrometer sample = 43.30  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0349         | 49.0          | 51.0             |
| 5.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0225         | 42.1          | 57.9             |
| 15.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0132         | 35.1          | 64.9             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 31.6          | 68.4             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 31.6          | 68.4             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 28.1          | 71.9             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0  | 15.2       | 0.0014         | 24.6          | 75.4             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.3     | 0.2  | 0.7  | 0.6  | 14.9    | 16.7  | 36.1 | 9.9  | 5.7  | 2.7     | 54.4  | 28.9 |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                 |                 |                 | 0.0048          | 0.0354          | 0.0420          | 0.0591          | 0.0644          | 0.0701          | 0.0819          |

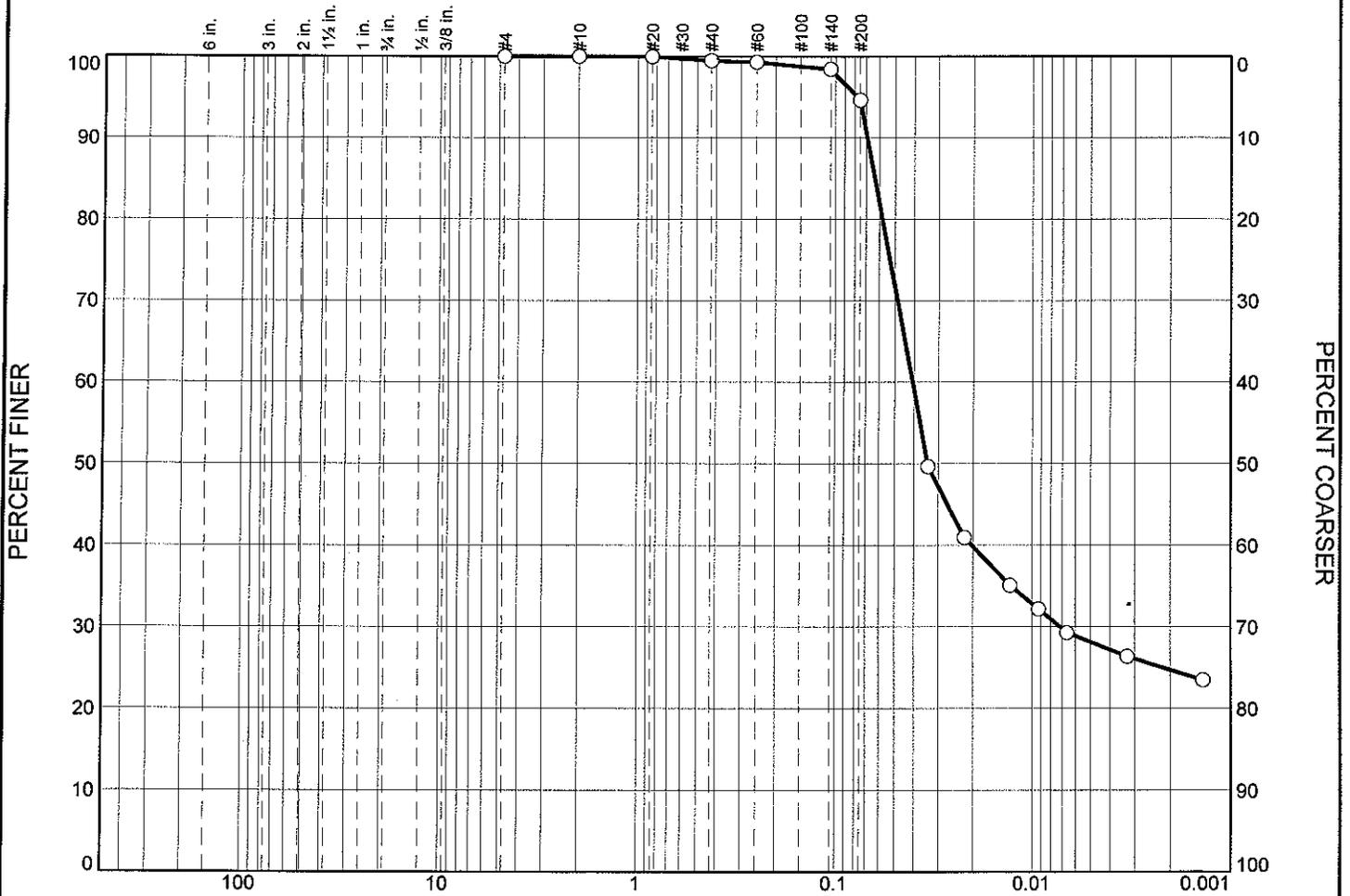
Fineness

Modulus

0.03

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.0             | 0.0             | 0.0             | 0.4             | 0.3             | 0.7             | 14.3           | 36.4           | 10.8 | 6.4  | 3.6     | 27.1   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.0632          | 0.0406          | 0.0340          | 0.0072          |                 |                 |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** L0912921     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 **Source of Sample:** 507612     **Sample Number:** L0912921-18  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

**Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
**Project Number:** L0912921  
**Location:** 507612  
**Sample Number:** L0912921-18  
**Sieve opening list:** BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 7.53  
 Tare Wt. = 4.01  
 Minus #200 from wash = 93.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 52.24                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.82                  | 482.82               | 100.0         | 0.0              |
|                             |              | #20                | 404.00                  | 403.97               | 99.9          | 0.1              |
|                             |              | #40                | 376.90                  | 376.65               | 99.5          | 0.5              |
|                             |              | #60                | 368.82                  | 368.73               | 99.3          | 0.7              |
|                             |              | #140               | 343.09                  | 342.63               | 98.4          | 1.6              |
|                             |              | #200               | 329.98                  | 328.00               | 94.6          | 5.4              |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 94.6  
 Weight of hydrometer sample = 52.24  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0170         | 1.0171            | 0.0135 | 14.0 | 12.6       | 0.0338         | 49.7          | 50.3             |
| 5.00                | 21.0            | 1.0140         | 1.0141            | 0.0135 | 11.0 | 13.4       | 0.0221         | 40.9          | 59.1             |
| 15.00               | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0130         | 35.1          | 64.9             |
| 30.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0093         | 32.2          | 67.8             |
| 60.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0066         | 29.3          | 70.7             |
| 250.00              | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0033         | 26.4          | 73.6             |
| 1440.00             | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0014         | 23.5          | 76.5             |

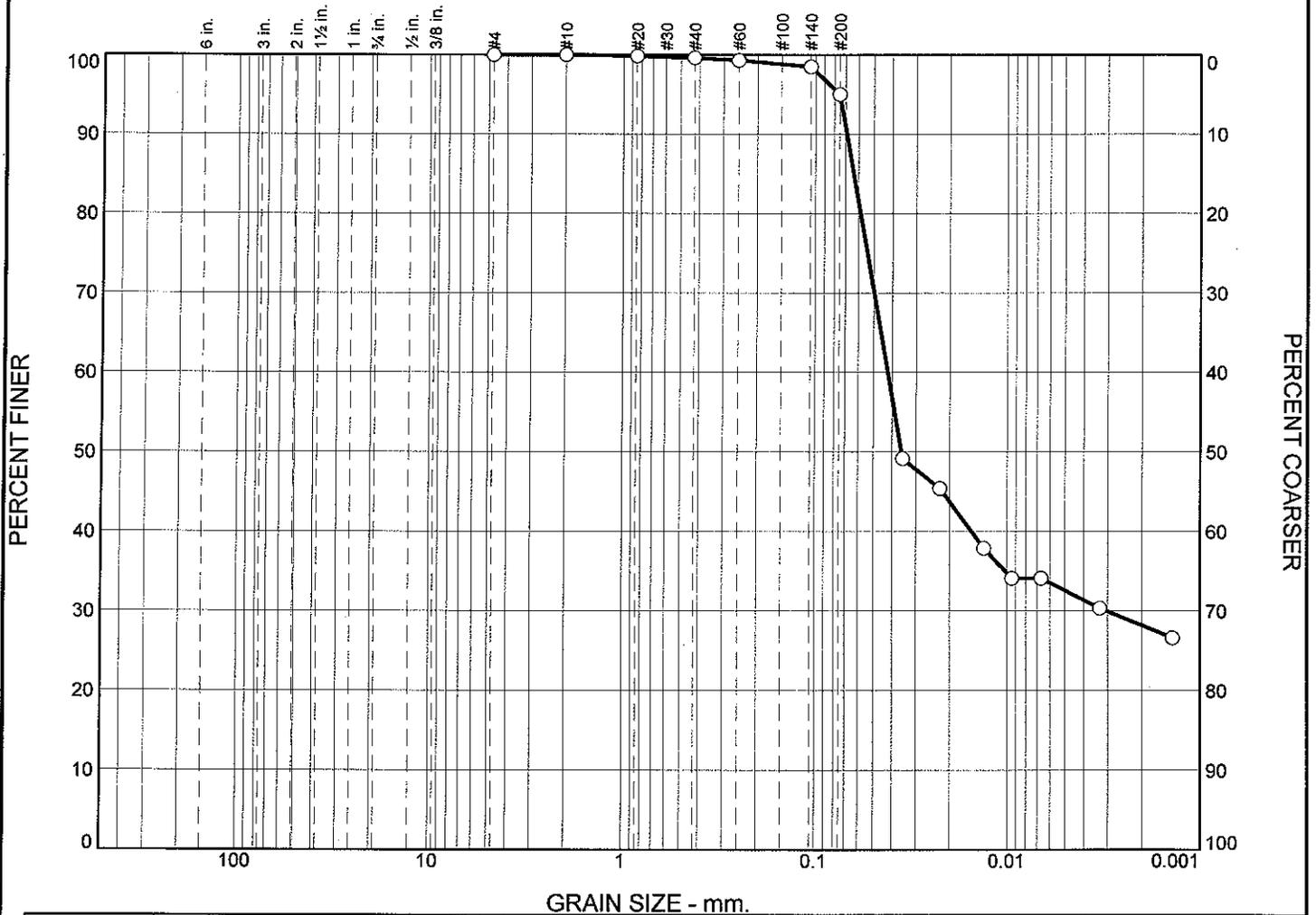
**Fractional Components**

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.0     | 0.4  | 0.3  | 0.7  | 14.3    | 15.7  | 36.4 | 10.8 | 6.4  | 3.6     | 57.2  | 27.1 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0072 | 0.0340 | 0.0406 | 0.0579 | 0.0632 | 0.0691 | 0.0776 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.02                    |

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               | 0.0        | 0.0       | 0.0             | 0.0             | 0.1             | 0.2             | 0.4             | 0.6             | 14.7           | 35.9           | 7.9  | 6.1  | 2.9     | 31.2   |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.0636          | 0.0421          | 0.0357          | 0.0030          |                 |                 |                |                |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

**Project No.** L0912921    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 **Source of Sample:** 507613    **Sample Number:** L0912921-19  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
**Figure**

**GRAIN SIZE DISTRIBUTION TEST DATA**

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912921  
 Location: 507613  
 Sample Number: L0912921-19  
 Sieve opening list: BS Bulk Sieve

**Sieve Test Data**

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 6.63  
 Tare Wt. = 3.95  
 Minus #200 from wash = 93.4%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 40.57                       | 0.00         | #4                 | 511.64                  | 511.64               | 100.0         | 0.0              |
|                             |              | #10                | 481.60                  | 481.60               | 100.0         | 0.0              |
|                             |              | #20                | 407.20                  | 407.13               | 99.8          | 0.2              |
|                             |              | #40                | 375.77                  | 375.68               | 99.6          | 0.4              |
|                             |              | #60                | 372.54                  | 372.42               | 99.3          | 0.7              |
|                             |              | #140               | 349.54                  | 349.21               | 98.5          | 1.5              |
|                             |              | #200               | 316.18                  | 314.77               | 95.0          | 5.0              |

**Hydrometer Test Data**

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 95.0  
 Weight of hydrometer sample = 40.57  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0352         | 49.2          | 50.8             |
| 5.00                | 21.0            | 1.0120         | 1.0121            | 0.0135 | 9.0  | 13.9       | 0.0225         | 45.4          | 54.6             |
| 15.00               | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0132         | 37.9          | 62.1             |
| 30.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0094         | 34.1          | 65.9             |
| 60.00               | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0067         | 34.1          | 65.9             |
| 250.00              | 21.0            | 1.0080         | 1.0081            | 0.0135 | 5.0  | 15.0       | 0.0033         | 30.3          | 69.7             |
| 1440.00             | 21.0            | 1.0070         | 1.0071            | 0.0135 | 4.0  | 15.2       | 0.0014         | 26.6          | 73.4             |

**Fractional Components**

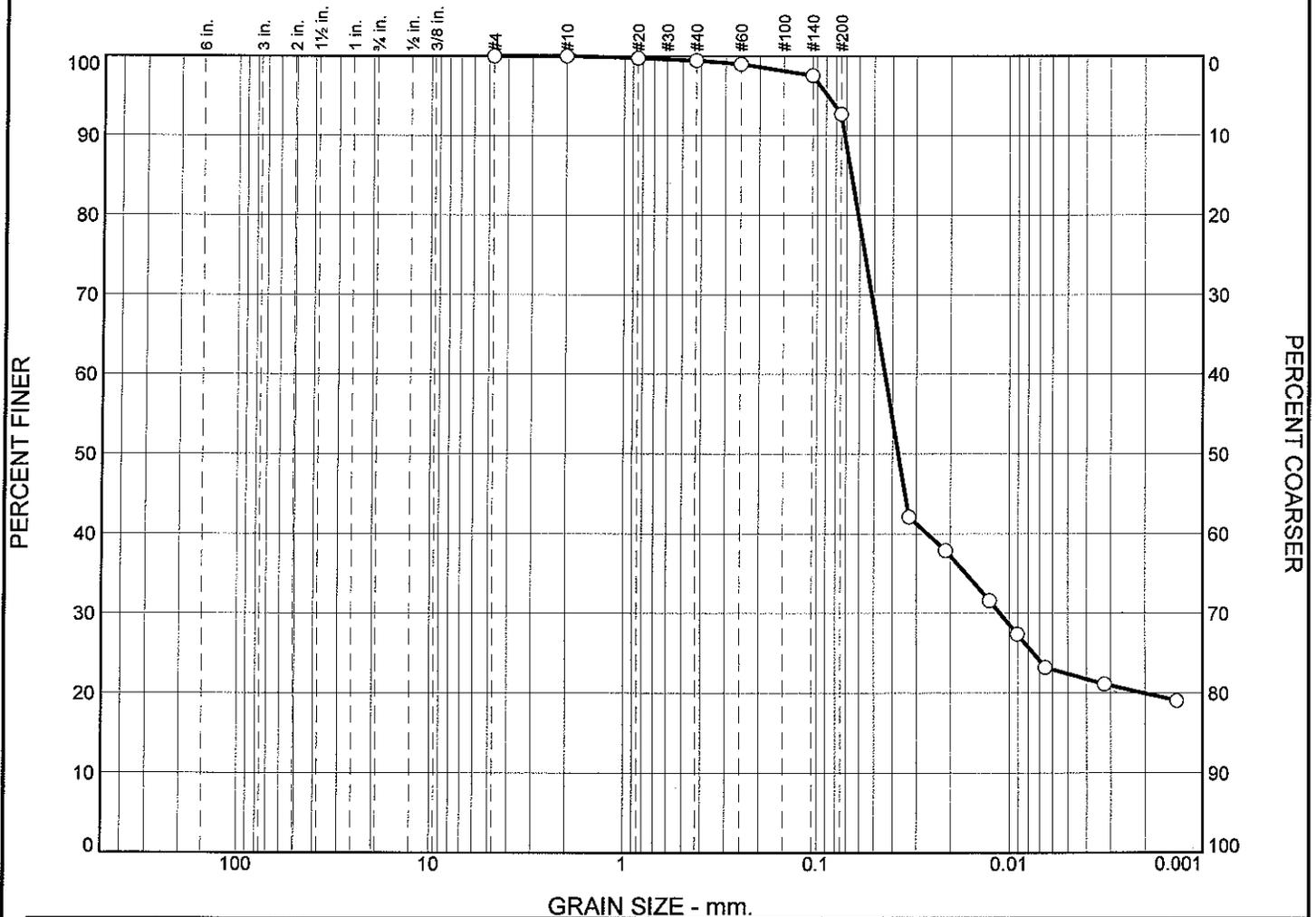
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.1     | 0.2  | 0.4  | 0.6  | 14.7    | 16.0  | 35.9 | 7.9  | 6.1  | 2.9     | 52.8  | 31.2 |

| D10 | D15 | D20 | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|-----|--------|--------|--------|--------|--------|--------|--------|
|     |     |     | 0.0030 | 0.0357 | 0.0421 | 0.0585 | 0.0636 | 0.0690 | 0.0750 |

|                         |
|-------------------------|
| <b>Fineness Modulus</b> |
| 0.02                    |

Alpha Analytical

# Particle Size Distribution Report



|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |      |      |                | % Silt         |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|------|------|----------------|----------------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med. | Fine | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| ○ | 0.0        | 0.0       | 0.0       | 0.0        | 0.2     | 0.3    | 0.5  | 1.2  | 16.2           | 40.0           | 7.4  | 8.8  | 3.7     | 21.7   |
| × | LL         | PL        | D85       | D60        | D50     | D30    | D15  | D10  | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| ○ |            |           | 0.0661    | 0.0439     | 0.0373  | 0.0111 |      |      |                |                |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912921    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507626    <b>Sample Number:</b> L0912921-20</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  |                        |
| <p><b>Figure</b></p>  |                        |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912921

Location: 507626

Sample Number: L0912921-20

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 10.69  
 Tare Wt. = 4.01  
 Minus #200 from wash = 90.6%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 70.98                       | 0.00         | #4                 | 514.20                  | 514.20               | 100.0         | 0.0              |
|                             |              | #10                | 482.82                  | 482.82               | 100.0         | 0.0              |
|                             |              | #20                | 404.15                  | 403.97               | 99.7          | 0.3              |
|                             |              | #40                | 376.87                  | 376.65               | 99.4          | 0.6              |
|                             |              | #60                | 369.05                  | 368.73               | 99.0          | 1.0              |
|                             |              | #140               | 343.65                  | 342.63               | 97.5          | 2.5              |
|                             |              | #200               | 331.44                  | 328.00               | 92.7          | 7.3              |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 92.7

Weight of hydrometer sample = 70.98

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 21.0            | 1.0200         | 1.0201            | 0.0135 | 17.0 | 11.8       | 0.0327         | 42.1          | 57.9             |
| 5.00                | 21.0            | 1.0180         | 1.0181            | 0.0135 | 15.0 | 12.3       | 0.0212         | 37.9          | 62.1             |
| 15.00               | 21.0            | 1.0150         | 1.0151            | 0.0135 | 12.0 | 13.1       | 0.0126         | 31.6          | 68.4             |
| 30.00               | 21.0            | 1.0130         | 1.0131            | 0.0135 | 10.0 | 13.6       | 0.0091         | 27.4          | 72.6             |
| 60.00               | 21.0            | 1.0110         | 1.0111            | 0.0135 | 8.0  | 14.2       | 0.0066         | 23.2          | 76.8             |
| 250.00              | 21.0            | 1.0100         | 1.0101            | 0.0135 | 7.0  | 14.4       | 0.0032         | 21.1          | 78.9             |
| 1440.00             | 21.0            | 1.0090         | 1.0091            | 0.0135 | 6.0  | 14.7       | 0.0014         | 19.0          | 81.0             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.0     | 0.0      | 0.2     | 0.3  | 0.5  | 1.2  | 16.2    | 18.4  | 40.0 | 7.4  | 8.8  | 3.7     | 59.9  | 21.7 |

| D10 | D15 | D20    | D30    | D50    | D60    | D80    | D85    | D90    | D95    |
|-----|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     |     | 0.0020 | 0.0111 | 0.0373 | 0.0439 | 0.0609 | 0.0661 | 0.0718 | 0.0884 |

Fineness Modulus

0.03

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. *NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. *NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. *NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A,3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D,9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.

# CHAIN OF CUSTODY



1015-40

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #: **LO912921**

**Report Information**    **Data Deliverables**    **Billing Information**

FAX     EMAIL     Same as Client info    PO #:

ADEx     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program    Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          | SAMPLE HANDLING | TOTAL # BOTTLES |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------|-----------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                 |                 |
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**SAMPLE HANDLING**

Filtration

Done

Not Needed

Lab to do

Preservation

Lab to do

(Please specify below)

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|   |        |         |       |    |    |
|---|--------|---------|-------|----|----|
| 1 | 507211 | 9/23/09 | 16:00 | SE | JB |
| 2 | 507212 | 9/23/09 | 16:35 | SE | JB |
| 3 | 507213 | 9/23/09 | 16:45 | SE | JB |
|   | 507225 | 9/23/09 | 16:25 | SE | JB |
| 4 | 507226 | 9/23/09 | 16:25 | SE | JB |
|   | 507227 | 9/23/09 | 16:25 | SE | JB |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:     | Date/Time     | Received By:        | Date/Time     |
|----------------------|---------------|---------------------|---------------|
| <i>James Birk</i>    | 9/23/09 14:30 | <i>Paul Belmont</i> | 9/23/09       |
| <i>Rachel McLean</i> | 9/24/09 9:00  | <i>Paul Belmont</i> | 9/24/09 9:20  |
| <i>Paul Belmont</i>  | 9/24/09 11:00 | <i>James Birk</i>   | 9/24/09 11:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 339

# CHAIN OF CUSTODY

PAGE 8 OF 12



Westborough, MA  
TEL: 508-898-9220  
FAX: 508-898-9193

Mansfield, MA  
TEL: 508-822-9300  
FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 20912921

## Report Information Data Deliverables

FAX  EMAIL  
 ADEX  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
**Filtration**  
 Done  
 Not Needed  
 Lab to do  
**Preservation**  
 Lab to do  
*(Please specify below)*

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 5                              | 507311    | 9-23-09    | 17:20 | SE            | JB                 |
| 6                              | 507312    | 9/23/09    | 17:41 | SE            | JB                 |
| 7                              | 507313    | 9/23/09    | 17:50 | SE            | JB                 |
|                                | 507325    | 9/23/09    | 17:30 | SE            | JB                 |
| 8                              | 507326    | 9/23/09    | 17:30 | SE            | JB                 |
|                                | 507327    | 9/23/09    | 17:30 | SE            | JB                 |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
|---------------------|---------------|---------------------|---------------|
| <i>James Boych</i>  | 9/23/09 2:30  | <i>Paul Wilbert</i> | 9/23/09 19:37 |
| <i>Paul Wilbert</i> | 9/24/09 9:00  | <i>Paul Wilbert</i> | 9/24/09 9:50  |
| <i>Paul Wilbert</i> | 9/24/09 11:00 | <i>Paul Wilbert</i> | 9/24/09 11:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 340

# CHAIN OF CUSTODY

PAGE 10 OF 12



Westborough, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

Mansfield, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd In Lab:

ALPHA Job #: 20912921

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

fed

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

SAMPLE HANDLING  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 9                              | 507411    | 9/23/09    | 13:55 | SE            | JB                 |
| 10                             | 507412    | 9/23/09    | 14:35 | SE            | JB                 |
| 11                             | 507413    | 9/23/09    | 14:45 | SE            | JB                 |
|                                | 507425    | 9/23/09    | 14:23 | SE            | JB                 |
| 12                             | 507426    | 9/23/09    | 14:23 | SE            | JB                 |
|                                | 507427    | 9/23/09    | 14:23 | SE            | JB                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
|---------------------|---------------|---------------------|---------------|
| <i>James Baird</i>  | 9/23/09 19:30 | <i>Paul Dillert</i> | 9/23/09       |
| <i>Paul Dillert</i> | 9/24/09 9:30  | <i>Paul Dillert</i> | 9/24/09 9:20  |
| <i>Paul Dillert</i> | 9/24/09 11:00 | <i>Paul Dillert</i> | 9/24/09 11:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Station 341

# CHAIN OF CUSTODY

PAGE 11 OF 12



Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

Turn-Around Time  
 Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Date Rec'd In Lab: ALPHA Job #: 20912921

Report Information Data Deliverables Billing Information  
 FAX  EMAIL  Same as Client info PO #:  
 ADEX  Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program Criteria  
 fed

ANALYSIS

| total PCB congeners NOAA 18 | TOC | grain size | archive |  |  |  |  |  |  |  |  |  |  |  |  | SAMPLE HANDLING<br>Filtration<br><input type="checkbox"/> Done<br><input checked="" type="checkbox"/> Not Needed<br><input type="checkbox"/> Lab to do<br>Preservation<br><input type="checkbox"/> Lab to do<br>(Please specify below) | TOTAL # BOTTLES |          |   |
|-----------------------------|-----|------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------|----------|---|
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
| 13                          |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
| 14                          |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
| 15                          |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | ben gs   | 1 |
| 16                          |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed chem | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed gs   | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 | sed arch | 1 |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |
|                             |     |            |         |  |  |  |  |  |  |  |  |  |  |  |  |  |                 |          |   |

ALPHA Lab ID (Lab Use Only) Sample ID Collection Date Time Sample Matrix Sampler's Initials

| ALPHA Lab ID (Lab Use Only) | Sample ID | Collection Date | Collection Time | Sample Matrix | Sampler's Initials |
|-----------------------------|-----------|-----------------|-----------------|---------------|--------------------|
|                             | 507511    | 9/23/09         | 11:40           | SE            | JB                 |
|                             | 507512    | 9/23/09         | 12:00           | SE            | JR                 |
|                             | 507513    | 9/23/09         | 12:12           | SE            | JB                 |
|                             | 507525    | 9/23/09         | 11:50           | SE            | JB                 |
|                             | 507526    | 9/23/09         | 11:50           | SE            | JB                 |
|                             | 507527    | 9/23/09         | 11:50           | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

|                      |               |                      |              |
|----------------------|---------------|----------------------|--------------|
| Relinquished By:     | Date/Time     | Received By:         | Date/Time    |
| <i>James Barry</i>   | 9/23/09 9:30  | <i>Jill McCarthy</i> | 9/23/09      |
| <i>Jill McCarthy</i> | 9/24/09 9:00  | <i>Paul Gilbert</i>  | 9/24/09 9:00 |
| <i>Paul Gilbert</i>  | 9/24/09 11:00 | <i>James Barry</i>   | 9/24/09 1:00 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.





## ANALYTICAL REPORT

|                 |   |
|-----------------|---|
| Lab Number:     | L0912922  |
| Client:         | Woods Hole Group<br>81 Technology Park Drive<br>East Falmouth, MA 02536 |
| ATTN:           | Lee Weishar   |
| Project Name:   | NBH LONG TERM MONITORING  |
| Project Number: | TO-0018   |
| Report Date:    | 02/02/10  |

Certifications & Approvals: MA (M-MA030), NY (11627), CT (PH-0141), NH (2206), NJ (MA015), RI (LAO00299), ME (MA0030), PA (Registration #68-02089), LA NELAC (03090), FL NELAC (E87814), US Army Corps of Engineers.

---

320 Forbes Boulevard, Mansfield, MA 02048-1806  
508-822-9300 (Fax) 508-822-3288 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

| <b>Alpha<br/>Sample ID</b> | <b>Client ID</b> | <b>Sample<br/>Location</b> | <b>Collection<br/>Date/Time</b> |
|----------------------------|------------------|----------------------------|---------------------------------|
| L0912922-01                | 507711           | NEW BEDFORD, MA            | 09/22/09 15:50                  |
| L0912922-02                | 507712           | NEW BEDFORD, MA            | 09/22/09 16:20                  |
| L0912922-03                | 507713           | NEW BEDFORD, MA            | 09/22/09 16:28                  |
| L0912922-04                | 507726           | NEW BEDFORD, MA            | 09/22/09 16:05                  |
| L0912922-05                | 507811           | NEW BEDFORD, MA            | 09/22/09 13:18                  |
| L0912922-06                | 507812           | NEW BEDFORD, MA            | 09/22/09 13:56                  |
| L0912922-07                | 507813           | NEW BEDFORD, MA            | 09/22/09 14:25                  |
| L0912922-08                | 507826           | NEW BEDFORD, MA            | 09/22/09 13:40                  |
| L0912922-09                | 507911           | NEW BEDFORD, MA            | 09/22/09 09:50                  |
| L0912922-10                | 507912           | NEW BEDFORD, MA            | 09/22/09 10:59                  |
| L0912922-12                | 507926           | NEW BEDFORD, MA            | 09/22/09 10:10                  |

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

For additional information, please contact Client Services at 800-624-9220.

---

### Report Submission

This report replaces the original report issued on October 15, 2009. The report was ammended to include revised Grain Size data.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Title: Technical Director/Representative

Date: 02/02/10

# **INORGANICS & MISCELLANEOUS**

**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-01  
**Client ID:** 507711  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 15:50  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.300  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 24.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 48.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 7.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-02  
**Client ID:** 507712  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 16:20  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 4.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 17.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 1.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 62.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-03  
**Client ID:** 507713  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 16:28  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.600  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 0.800  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 27.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 45.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 14.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-04  
**Client ID:** 507726  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 16:05  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 1.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 24.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 51.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 15.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 4.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-05  
**Client ID:** 507811  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 13:18  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 1.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 6.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 10.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 12.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 27.8   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 27.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 6.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-06  
**Client ID:** 507812  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 13:56  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.400  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 3.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 5.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 6.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 9.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 31.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 34.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 8.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-07  
**Client ID:** 507813  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 14:25  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 3.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 5.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 8.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 10.7   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 30.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 26.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-08  
**Client ID:** 507826  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 13:40  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 0.200  |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 1.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 6.10   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 30.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 30.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 7.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-09  
**Client ID:** 507911  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 09:50  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 5.20   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 9.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 14.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 25.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 11.3   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-10  
**Client ID:** 507912  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 10:59  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 2.40   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 23.6   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 23.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 23.4   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 7.70   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 6.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 6.00   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 1.30   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

### SAMPLE RESULTS

**Lab ID:** L0912922-12  
**Client ID:** 507926  
**Sample Location:** NEW BEDFORD, MA  
**Matrix:** Sediment

**Date Collected:** 09/22/09 10:10  
**Date Received:** 09/23/09  
**Field Prep:** Not Specified

| Parameter  | Result | Qualifier | Units | RDL   | Dilution Factor | Date Prepared | Date Analyzed  | Analytical Method | Analyst |
|--|--------|-----------|-------|-------|-----------------|---------------|----------------|-------------------|---------|
| <b>Grain Size (Wentworth Method) - Mansfield Lab</b> |        |           |       |       |                 |               |                |                   |         |
| Gravel (>2.00mm)                                     | 10.9   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Coarse Sand (1.00-2.00 mm)                      | 15.2   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Coarse Sand (0.50-1.00 mm)                           | 20.0   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Medium Sand (0.25-0.50 mm)                           | 16.1   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Fine Sand (0.125-0.25 mm)                            | 4.90   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Very Fine Sand (0.063-0.125 mm)                      | 5.60   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Silt - (1.95-62.5 um)                                | 9.80   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |
| Clay - (<1.95 um)                                    | 2.50   |           | %     | 0.100 | 1               | -             | 09/30/09 00:00 | 12,D422(M)        | SE      |



## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** NBH LONG TERM MONITORING

**Project Number:** TO-0018

**Lab Number:** L0912922

**Report Date:** 02/02/10

| Parameter   | Native Sample | Duplicate Sample | Units | RPD | Qual | RPD Limits |
|---|---------------|------------------|-------|-----|------|------------|
| Grain Size (Wentworth Method) - Mansfield Lab Associated sample(s): 01-10,12 QC Batch ID: WG382314-1 QC Sample: L0912922-08 Client ID: 507826 |               |                  |       |     |      |            |
| Gravel (>2.00mm)  | 0.2           | 1.30             | %     | 147 | Q    | 20         |
| Very Coarse Sand (1.00-2.00 mm)   | 1.8           | 2.20             | %     | 20  |      | 20         |
| Coarse Sand (0.50-1.00 mm)  | 6.1           | 3.80             | %     | 46  | Q    | 20         |
| Medium Sand (0.25-0.50 mm)  | 16.2          | 7.90             | %     | 69  | Q    | 20         |
| Fine Sand (0.125-0.25 mm)   | 7.7           | 13.5             | %     | 55  | Q    | 20         |
| Very Fine Sand (0.063-0.125 mm)   | 30.0          | 37.5             | %     | 22  | Q    | 20         |
| Silt - (1.95-62.5 um)   | 30.9          | 26.7             | %     | 15  |      | 20         |
| Clay - (<1.95 um)   | 7.0           | 6.60             | %     | 6   |      | 20         |

Project Name: NBH LONG TERM MONITORING

Lab Number: L0912922

Project Number: TO-0018

Report Date: 02/02/10

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

## Cooler Information

| Cooler | Custody Seal |
|--------|--------------|
| A      | Absent       |

## Container Information

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912922-01A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-02A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-03A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-04A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-05A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-06A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-07A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-08A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-08B | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-DUP()   |

\*Hold days indicated by values in parentheses



Project Name: NBH LONG TERM MONITORING

Project Number: TO-0018

Lab Number: L0912922

Report Date: 02/02/10

**Container Information**

| Container ID | Container Type          | Cooler | pH  | Temp deg C | Pres | Seal   | Analysis   |
|--------------|-------------------------|--------|-----|------------|------|--------|--|
| L0912922-09A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-10A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |
| L0912922-12A | Glass 250ml unpreserved | A      | N/A | 3.1        | Y    | Absent | A2-HYDROMETER(),A2-SIEVE_#10(7),A2-SIEVE_#140(7),A2-SIEVE_#60(7),A2-SIEVE_#4(7),A2-SIEVE_#40(7),A2-SIEVE_#20(7),A2-SIEVE_#200(7) |

\*Hold days indicated by values in parentheses



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

## GLOSSARY

### Acronyms

- EPA** - Environmental Protection Agency.
- LCS** - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
- LCSD** - Laboratory Control Sample Duplicate: Refer to LCS.
- MS** - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
- MSD** - Matrix Spike Sample Duplicate: Refer to MS.
- NA** - Not Applicable.
- NC** - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
- ND** - Not detected at the reported detection limit for the sample.
- NI** - Not Ignitable.
- RDL** - Reported Detection Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
- RPD** - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RDL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

Report Format: Data Usability Report



**Project Name:** NBH LONG TERM MONITORING  
**Project Number:** TO-0018

**Lab Number:** L0912922  
**Report Date:** 02/02/10

## REFERENCES

- 12 Annual Book of ASTM Standards. American Society for Testing and Materials.

## LIMITATION OF LIABILITIES

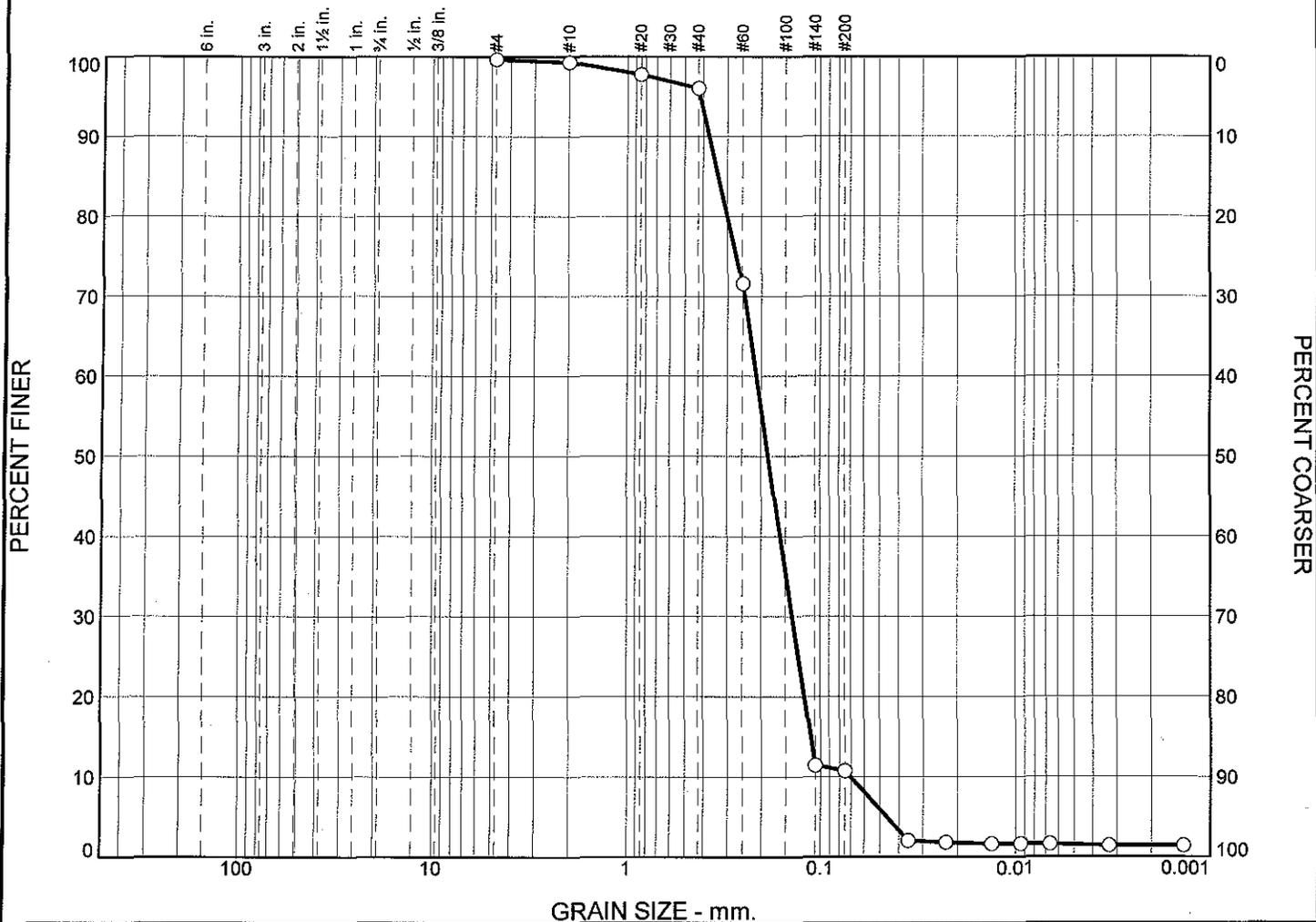
Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Woods Hole Labs shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Woods Hole Labs.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



# Wet Sieve Hydrometer ASTM D422

# Particle Size Distribution Report



GRAIN SIZE - mm.

| %                    | Boulders | Cobbles | Pebbles | Granules | Sand    |        |        |        |         | Silt |        |      |         | Clay |
|----------------------|----------|---------|---------|----------|---------|--------|--------|--------|---------|------|--------|------|---------|------|
|                      |          |         |         |          | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs. | Med.   | Fine | V. Fine |      |
| ○                    |          |         |         | 0.3      | 1.3     | 1.6    | 24.8   | 48.6   | 14.4    | 6.6  | 0.3    | 0.1  | 0.1     | 1.5  |
| ×                    | LL       | PL      | D85     | D60      | D50     | D30    | D15    | D10    | Cc      | Cu   |        |      |         |      |
| ○                    |          |         | 0.3345  | 0.2120   | 0.1838  | 0.1382 | 0.1116 | 0.0706 | 1.28    | 3.00 |        |      |         |      |
| Material Description |          |         |         |          |         |        |        |        |         | USCS | AASHTO |      |         |      |
| ○                    |          |         |         |          |         |        |        |        |         |      |        |      |         |      |

**Project No.** L0912922    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
 ○ **Source of Sample:** 507711    **Sample Number:** L0912922-01  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**  
  
  
**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

2/1/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912922

Location: 507711

Sample Number: L0912922-01

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 82.94  
 Tare Wt. = 4.37  
 Minus #200 from wash = 9.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 86.36                       | 0.00         | #4                 | 522.09                  | 521.80               | 99.7          | 0.3              |
|                             |              | #10                | 485.12                  | 484.81               | 99.3          | 0.7              |
|                             |              | #20                | 406.76                  | 405.42               | 97.8          | 2.2              |
|                             |              | #40                | 367.05                  | 365.57               | 96.0          | 4.0              |
|                             |              | #60                | 387.29                  | 366.16               | 71.6          | 28.4             |
|                             |              | #140               | 394.82                  | 342.86               | 11.4          | 88.6             |
|                             |              | #200               | 345.92                  | 345.32               | 10.7          | 89.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 10.7

Weight of hydrometer sample = 86.36

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 2.0           | 98.0             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 1.8           | 98.2             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.6           | 98.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.6           | 98.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 1.6           | 98.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 1.4           | 98.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.4           | 98.6             |

## Fractional Components

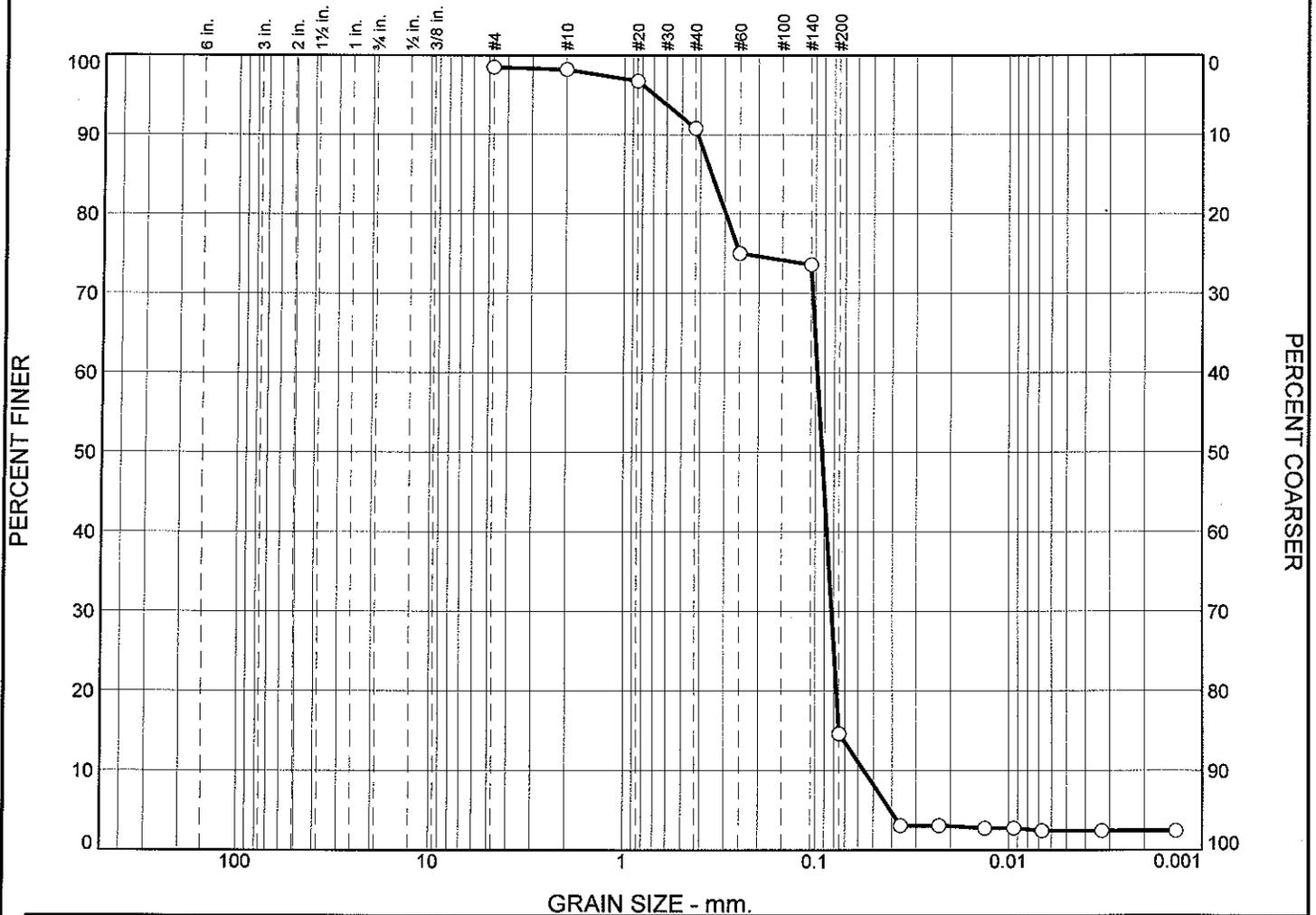
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.3      | 1.3     | 1.6  | 24.8 | 48.6 | 14.4    | 90.7  | 6.6  | 0.3  | 0.1  | 0.1     | 7.1   | 1.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0706          | 0.1116          | 0.1198          | 0.1382          | 0.1838          | 0.2120          | 0.3001          | 0.3345          | 0.3728          | 0.4155          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.90             | 3.00           | 1.28           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |
| <input type="radio"/>               |            |           |                 | 0.2             | 1.2             | 4.8             | 17.2            | 1.1             | 62.1           | 8.7            | 0.2  | 0.3  | 0.2     | 2.4    |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |
| <input type="radio"/>               |            |           | 0.3496          | 0.0979          | 0.0923          | 0.0821          | 0.0752          | 0.0559          | 1.23           | 1.75           |      |      |         |        |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|  |                             |
|--|-----------------------------|
| <b>Project No.</b> L0912922 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><input type="radio"/> <b>Source of Sample:</b> 507712 <b>Sample Number:</b> L0912922-02 | <b>Remarks:</b><br><br><br> |
| <b>Alpha Analytical</b><br><b>Mansfield, MA</b>  |                             |

Figure

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912922  
 Location: 507712  
 Sample Number: L0912922-02  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 66.53  
 Tare Wt. = 4.33  
 Minus #200 from wash = 10.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 69.75                       | 0.00         | #4                 | 521.99                  | 520.94               | 98.5          | 1.5              |
|                             |              | #10                | 482.36                  | 482.15               | 98.2          | 1.8              |
|                             |              | #20                | 412.08                  | 411.08               | 96.8          | 3.2              |
|                             |              | #40                | 382.40                  | 378.24               | 90.8          | 9.2              |
|                             |              | #60                | 380.85                  | 369.86               | 75.0          | 25.0             |
|                             |              | #140               | 348.21                  | 347.22               | 73.6          | 26.4             |
|                             |              | #200               | 387.70                  | 346.56               | 14.6          | 85.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 14.6  
 Weight of hydrometer sample = 69.75  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 3.1           | 96.9             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 3.1           | 96.9             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 2.8           | 97.2             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 2.8           | 97.2             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 2.4           | 97.6             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 2.4           | 97.6             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.4           | 97.6             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 1.2     | 4.8  | 17.2 | 1.1  | 62.1    | 86.4  | 8.7  | 0.2  | 0.3  | 0.2     | 9.4   | 2.4  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0559          | 0.0752          | 0.0774          | 0.0821          | 0.0923          | 0.0979          | 0.2955          | 0.3496          | 0.4138          | 0.6928          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.58             | 1.75           | 1.23           |

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## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912922

Location: 507713

Sample Number: L0912922-03

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 76.46  
 Tare Wt. = 4.40  
 Minus #200 from wash = 6.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 77.22                       | 0.00         | #4                 | 521.81                  | 521.80               | 100.0         | 0.0              |
|                             |              | #10                | 485.07                  | 484.84               | 99.7          | 0.3              |
|                             |              | #20                | 405.97                  | 405.42               | 99.0          | 1.0              |
|                             |              | #40                | 366.34                  | 365.61               | 98.0          | 2.0              |
|                             |              | #60                | 386.79                  | 366.16               | 71.3          | 28.7             |
|                             |              | #140               | 385.87                  | 342.86               | 15.6          | 84.4             |
|                             |              | #200               | 345.86                  | 345.37               | 15.0          | 85.0             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 15.0

Weight of hydrometer sample = 77.22

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0358         | 3.2           | 96.8             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 2.9           | 97.1             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 2.6           | 97.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 2.6           | 97.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 2.6           | 97.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 2.6           | 97.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.2           | 97.8             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.2      | 0.6     | 0.8  | 27.0 | 45.0 | 14.2    | 87.6  | 9.0  | 0.4  | 0.1  |         | 9.5   | 2.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0549          | 0.0757          | 0.1134          | 0.1323          | 0.1800          | 0.2100          | 0.2971          | 0.3281          | 0.3623          | 0.4002          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.84             | 3.83           | 1.52           |

Alpha Analytical



## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912922

Location: 507726

Sample Number: L0912922-04

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 71.23  
 Tare Wt. = 4.40  
 Minus #200 from wash = 8.8%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 73.24                       | 0.00         | #4                 | 521.01                  | 520.98               | 100.0         | 0.0              |
|                             |              | #10                | 483.26                  | 482.19               | 98.5          | 1.5              |
|                             |              | #20                | 411.42                  | 411.08               | 98.0          | 2.0              |
|                             |              | #40                | 379.71                  | 378.19               | 96.0          | 4.0              |
|                             |              | #60                | 387.18                  | 369.86               | 72.3          | 27.7             |
|                             |              | #140               | 393.64                  | 347.22               | 8.9           | 91.1             |
|                             |              | #200               | 347.32                  | 345.59               | 6.6           | 93.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 6.6

Weight of hydrometer sample = 73.24

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 1.3           | 98.7             |
| 5.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0228         | 1.3           | 98.7             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 1.2           | 98.8             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.2           | 98.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 1.2           | 98.8             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 1.2           | 98.8             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.0           | 99.0             |

## Fractional Components

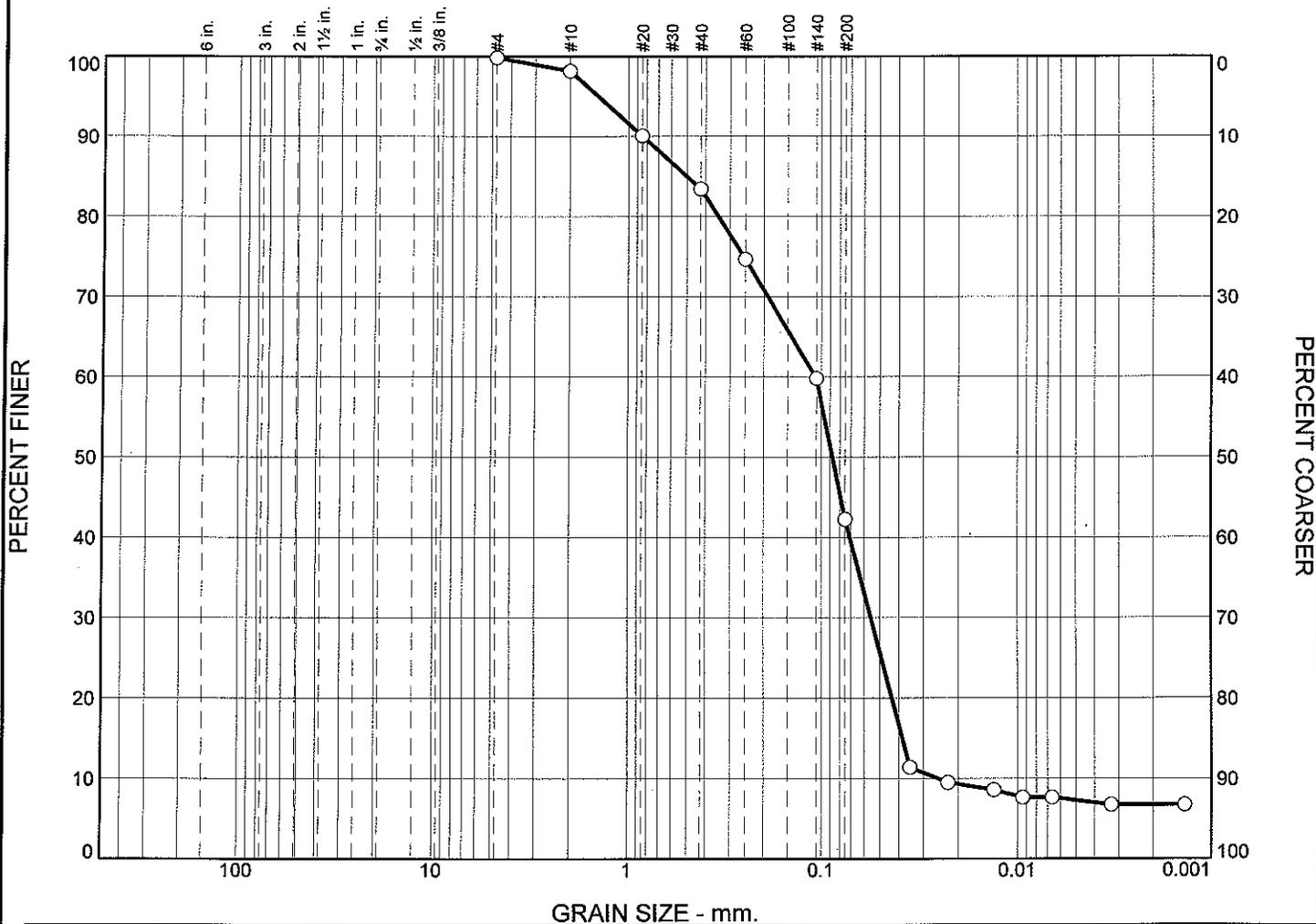
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.2      | 0.4     | 1.7  | 24.1 | 51.2 | 15.8    | 93.2  | 4.0  | 0.1  | 0.0  | 0.0     | 4.1   | 1.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.1075          | 0.1151          | 0.1231          | 0.1410          | 0.1848          | 0.2116          | 0.2971          | 0.3324          | 0.3718          | 0.4160          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.91             | 1.97           | 0.87           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | % | Cobbles | % Pebbles |                 |                 | % Sand          |                 |                 |                 |                | % Silt         |         |      |      | % Clay |      |
|---|----------|---|---------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|---------|------|------|--------|------|
|   |          |   |         |           |                 |                 | %               | Granules        | V. Crs.         | Crs.            | Med.           | Fine           | V. Fine | Crs. | Med. |        | Fine |
| ○ |          |   |         |           |                 |                 | 1.3             | 6.6             | 6.6             | 10.3            | 12.1           | 27.8           | 24.0    | 1.9  | 1.3  | 0.7    | 6.9  |
| × | LL       |   | PL      |           | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |         |      |      |        |      |
| ○ |          |   |         |           | 0.4996          | 0.1074          | 0.0874          | 0.0555          | 0.0384          | 0.0255          | 1.13           | 4.21           |         |      |      |        |      |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912922    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507811    <b>Sample Number:</b> L0912922-05</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912922  
 Location: 507811  
 Sample Number: L0912922-05  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 56.90  
 Tare Wt. = 4.60  
 Minus #200 from wash = 28.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 72.97                       | 0.00         | #4                 | 521.92                  | 521.81               | 99.8          | 0.2              |
|                             |              | #10                | 486.06                  | 484.84               | 98.2          | 1.8              |
|                             |              | #20                | 411.34                  | 405.42               | 90.1          | 9.9              |
|                             |              | #40                | 370.04                  | 365.22               | 83.5          | 16.5             |
|                             |              | #60                | 372.58                  | 366.16               | 74.7          | 25.3             |
|                             |              | #140               | 353.72                  | 342.86               | 59.8          | 40.2             |
|                             |              | #200               | 358.24                  | 345.44               | 42.2          | 57.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 42.2  
 Weight of hydrometer sample = 72.97  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 11.4          | 88.6             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 9.5           | 90.5             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 8.6           | 91.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 7.6           | 92.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 7.6           | 92.4             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 6.7           | 93.3             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.7           | 93.3             |

## Fractional Components

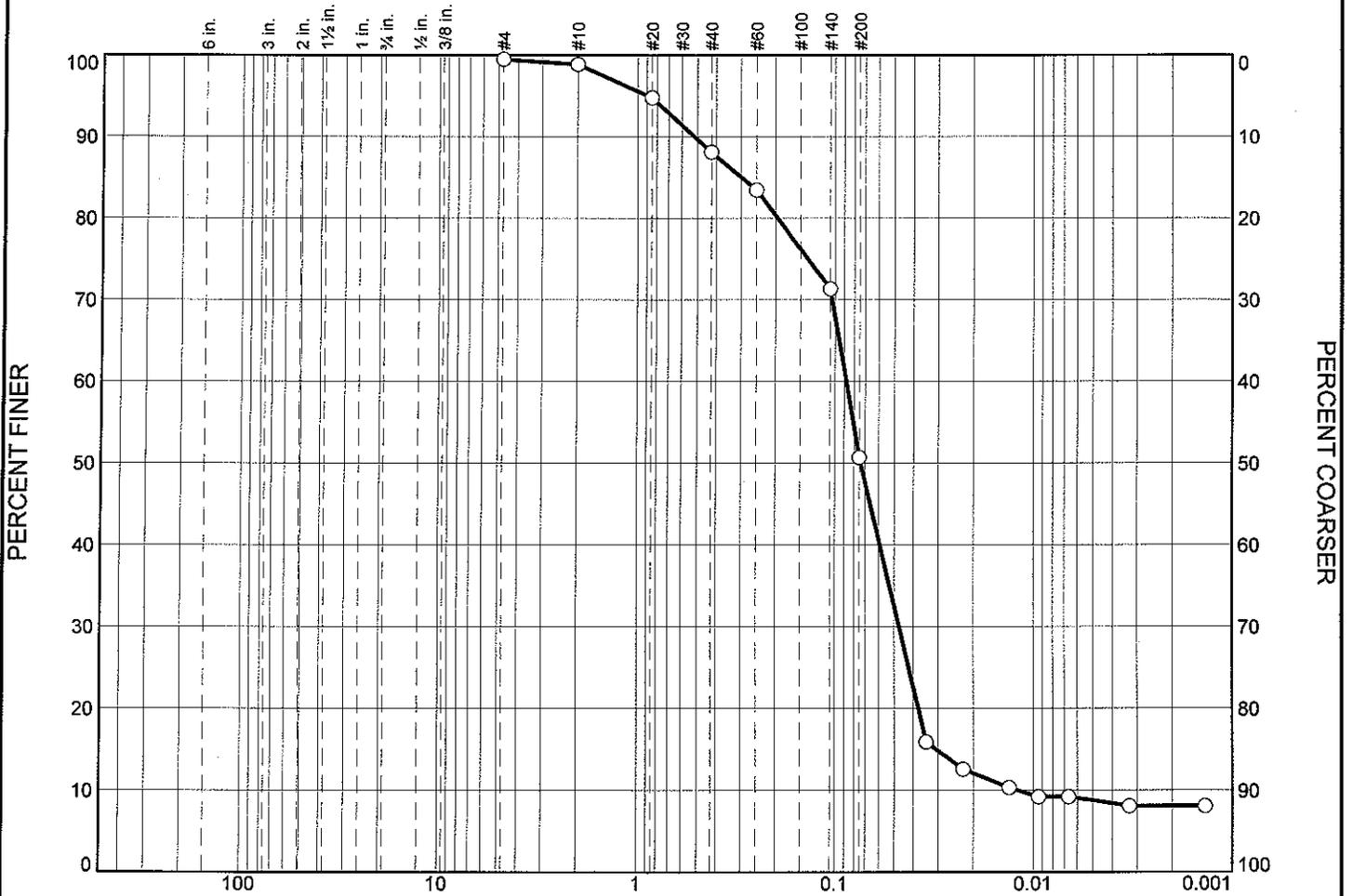
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.3      | 6.6     | 6.6  | 10.3 | 12.1 | 27.8    | 63.4  | 24.0 | 1.9  | 1.3  | 0.7     | 27.9  | 6.9  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0255          | 0.0384          | 0.0434          | 0.0555          | 0.0874          | 0.1074          | 0.3450          | 0.4996          | 0.8443          | 1.4305          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.78             | 4.21           | 1.13           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 0.4        | 3.4     | 5.9    | 6.1    | 9.8    | 31.2    | 27.4   | 4.1  | 1.8  | 0.9     | 8.3    |
| ⊗ | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |            |           | 0.2984    | 0.0877     | 0.0739  | 0.0472 | 0.0306 | 0.0120 | 2.12    | 7.31   |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912922    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507812    <b>Sample Number:</b> L0912922-06</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912922  
 Location: 507812  
 Sample Number: L0912922-06  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 44.28  
 Tare Wt. = 4.50  
 Minus #200 from wash = 45.5%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 72.98                       | 0.00         | #4                 | 521.26                  | 520.87               | 99.5          | 0.5              |
|                             |              | #10                | 482.56                  | 482.12               | 98.9          | 1.1              |
|                             |              | #20                | 414.08                  | 411.08               | 94.8          | 5.2              |
|                             |              | #40                | 382.92                  | 378.05               | 88.1          | 11.9             |
|                             |              | #60                | 373.23                  | 369.86               | 83.5          | 16.5             |
|                             |              | #140               | 356.08                  | 347.22               | 71.3          | 28.7             |
|                             |              | #200               | 361.64                  | 346.57               | 50.7          | 49.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 50.7  
 Weight of hydrometer sample = 72.68  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm   | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|------|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0140         | 1.0142            | 0.0133 | 11.0 | 13.4       | 0.0344         | 15.9          | 84.1             |
| 5.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0  | 14.2       | 0.0224         | 12.6          | 87.4             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0  | 14.7       | 0.0132         | 10.3          | 89.7             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0094         | 9.2           | 90.8             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0  | 15.0       | 0.0067         | 9.2           | 90.8             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0033         | 8.1           | 91.9             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0  | 15.2       | 0.0014         | 8.1           | 91.9             |

## Fractional Components

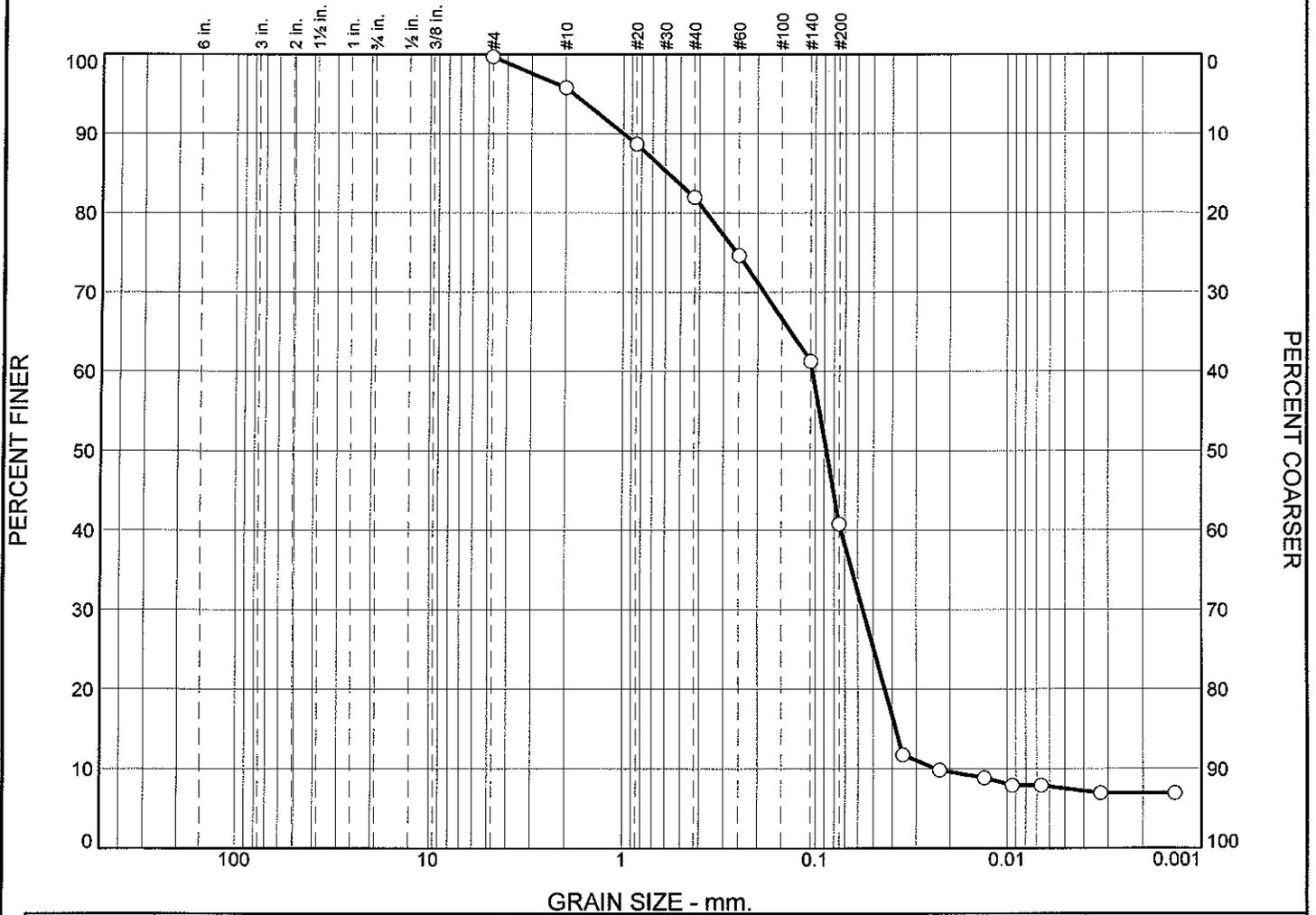
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 0.4      | 3.4     | 5.9  | 6.1  | 9.8  | 31.2    | 56.4  | 27.4 | 4.1  | 1.8  | 0.9     | 34.2  | 8.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0120          | 0.0306          | 0.0377          | 0.0472          | 0.0739          | 0.0877          | 0.1957          | 0.2984          | 0.5189          | 0.8950          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.53             | 7.31           | 2.12           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        | % Silt  |      |      |      | % Clay |         |     |
|-------------------------------------|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|------|------|------|--------|---------|-----|
|                                     |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs. | Med. | Fine |        | V. Fine |     |
| <input type="radio"/>               |            |           |           |            | 3.1     | 5.8    | 6.5    | 8.9    | 10.7    | 30.1 | 22.6 | 2.1  | 1.2    | 0.7     | 7.2 |
| <input checked="" type="checkbox"/> | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu   |      |      |        |         |     |
| <input type="radio"/>               |            |           | 0.5822    | 0.1037     | 0.0876  | 0.0566 | 0.0383 | 0.0237 | 1.30    | 4.38 |      |      |        |         |     |

| Material Description  | USCS | AASHTO |
|-----------------------|------|--------|
| <input type="radio"/> |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912922    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p><input type="radio"/> <b>Source of Sample:</b> 507813    <b>Sample Number:</b> L0912922-07</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912922

Location: 507813

Sample Number: L0912922-07

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 46.43  
 Tare Wt. = 4.30  
 Minus #200 from wash = 38.3%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 68.23                       | 0.00         | #4                 | 521.97                  | 521.76               | 99.7          | 0.3              |
|                             |              | #10                | 486.10                  | 483.42               | 95.8          | 4.2              |
|                             |              | #20                | 410.27                  | 405.42               | 88.7          | 11.3             |
|                             |              | #40                | 368.08                  | 363.51               | 82.0          | 18.0             |
|                             |              | #60                | 371.17                  | 366.16               | 74.6          | 25.4             |
|                             |              | #140               | 351.95                  | 342.86               | 61.3          | 38.7             |
|                             |              | #200               | 358.31                  | 344.31               | 40.8          | 59.2             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 40.8

Weight of hydrometer sample = 68.23

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 11.7          | 88.3             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 9.8           | 90.2             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 8.8           | 91.2             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 7.9           | 92.1             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 7.9           | 92.1             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 6.9           | 93.1             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.9           | 93.1             |

## Fractional Components

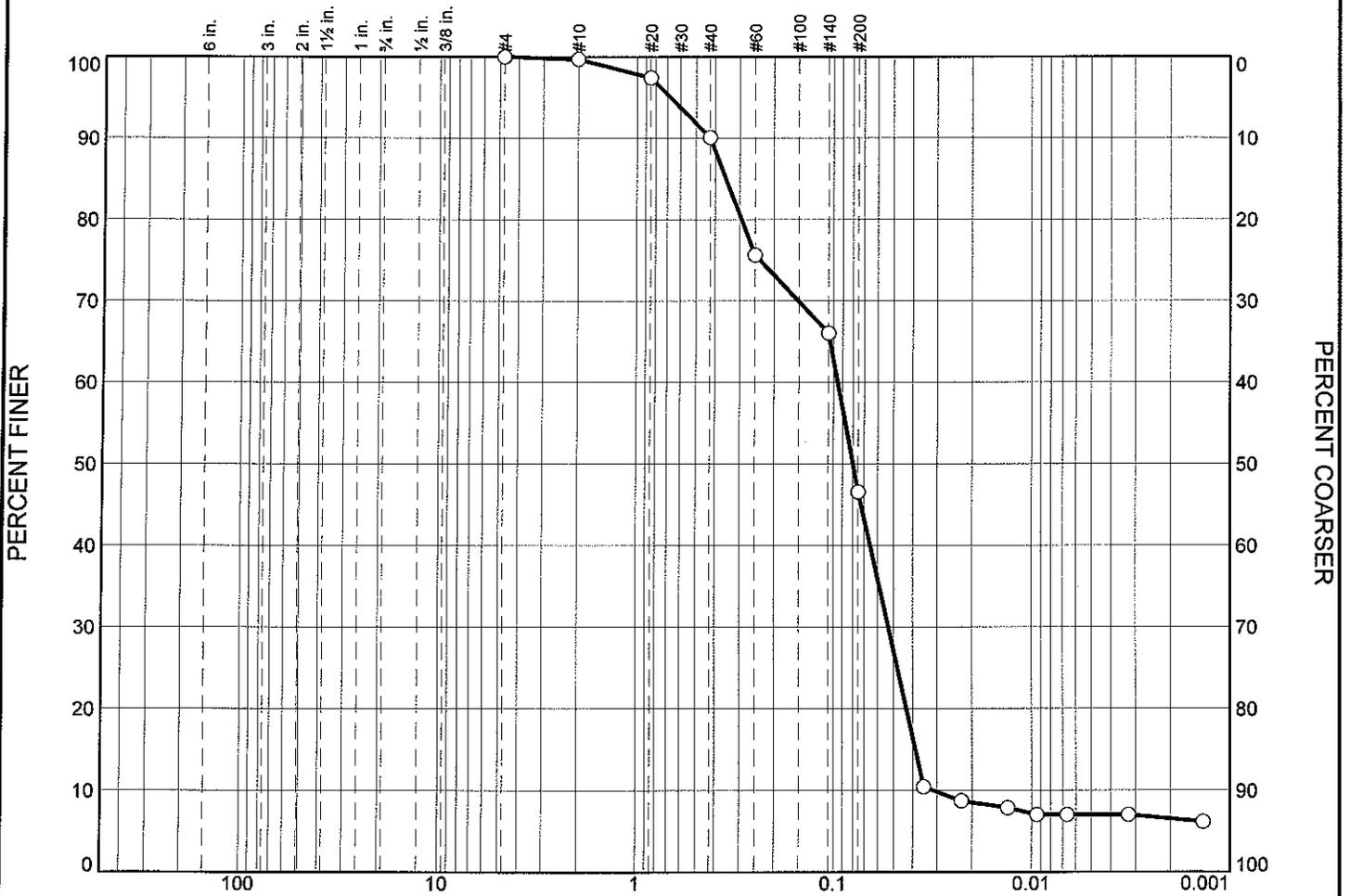
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 3.1      | 5.8     | 6.5  | 8.9  | 10.7 | 30.1    | 62.0  | 22.6 | 2.1  | 1.2  | 0.7     | 26.6  | 7.2  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0237          | 0.0383          | 0.0436          | 0.0566          | 0.0876          | 0.1037          | 0.3689          | 0.5822          | 0.9993          | 1.8242          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.83             | 4.38           | 1.30           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles |        | % Granules | % Sand  |        |        |      | % Silt  |      |      |      | % Clay |
|---|------------|-----------|-----------|--------|------------|---------|--------|--------|------|---------|------|------|------|--------|
|   |            |           |           |        |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs. | Med. | Fine |        |
| ○ | 0.0        | 0.0       | 0.1       |        | 0.2        | 1.8     | 6.1    | 16.2   | 7.7  | 30.0    | 28.0 | 1.8  | 1.1  | 7.0    |
| ⊗ | LL         | PL        | D85       | D60    | D50        | D30     | D15    | D10    | Cc   | Cu      |      |      |      |        |
| ○ |            |           | 0.3526    | 0.0952 | 0.0797     | 0.0530  | 0.0387 | 0.0316 | 0.93 | 3.01    |      |      |      |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912922     **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring  
  
 ○ **Source of Sample:** 507826     **Sample Number:** L0912922-08  
  
**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912922  
 Location: 507826  
 Sample Number: L0912922-08  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 67.15  
 Tare Wt. = 4.56  
 Minus #200 from wash = 28.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 87.75                       | 0.00         | #4                 | 520.89                  | 520.89               | 100.0         | 0.0              |
|                             |              | #10                | 482.40                  | 482.12               | 99.7          | 0.3              |
|                             |              | #20                | 413.06                  | 411.08               | 97.4          | 2.6              |
|                             |              | #40                | 384.42                  | 377.97               | 90.1          | 9.9              |
|                             |              | #60                | 382.52                  | 369.86               | 75.6          | 24.4             |
|                             |              | #140               | 355.65                  | 347.22               | 66.0          | 34.0             |
|                             |              | #200               | 363.62                  | 346.52               | 46.6          | 53.4             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 46.6  
 Weight of hydrometer sample = 87.75  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 10.4          | 89.6             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 8.7           | 91.3             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 7.8           | 92.2             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 7.0           | 93.0             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 7.0           | 93.0             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 7.0           | 93.0             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 6.1           | 93.9             |

## Fractional Components

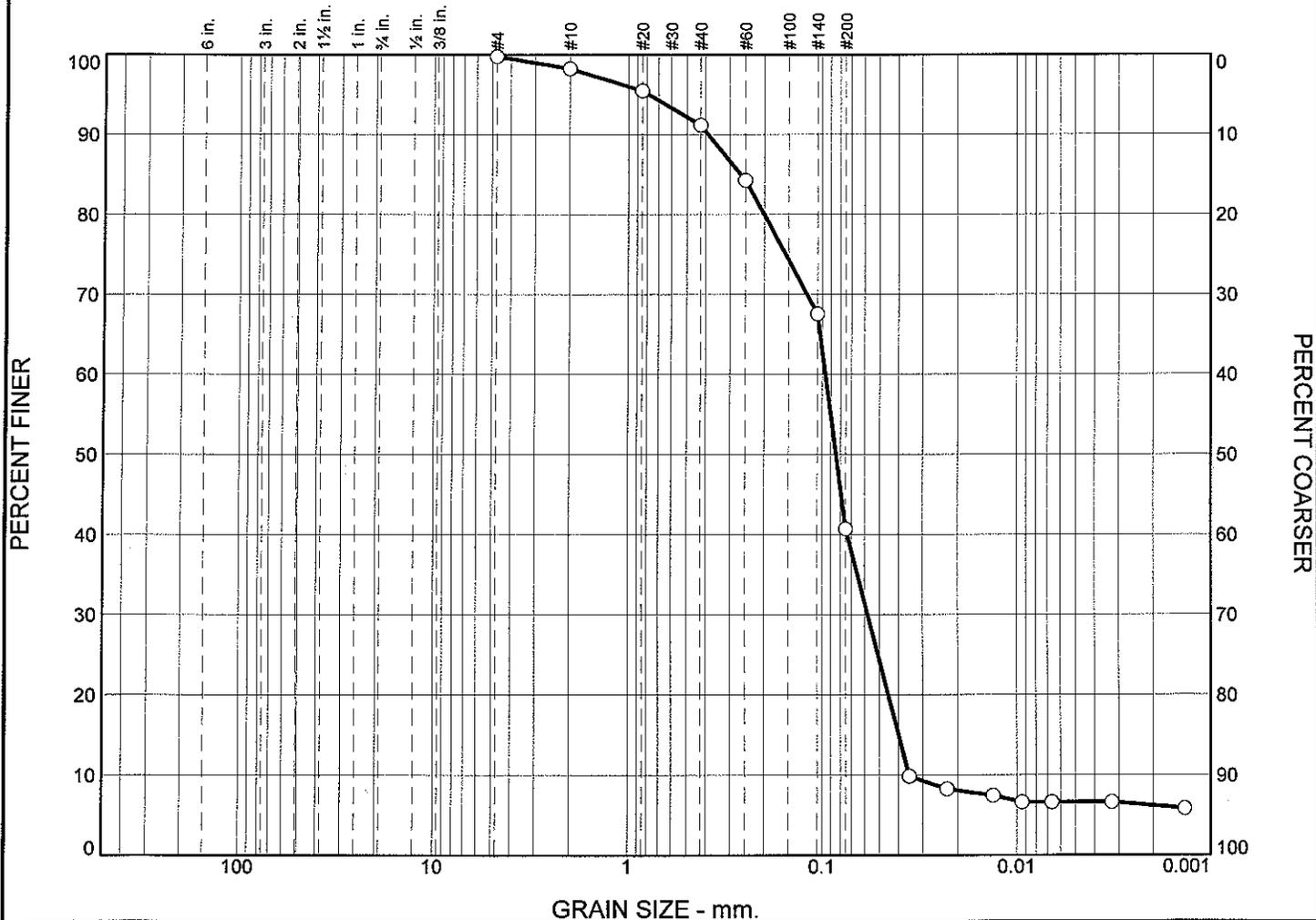
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
| 0.0      | 0.0     | 0.1     | 0.2      | 1.8     | 6.1  | 16.2 | 7.7  | 30.0    | 61.8  | 28.0 | 1.8  | 1.1  |         | 30.9  | 7.0  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0316          | 0.0387          | 0.0430          | 0.0530          | 0.0797          | 0.0952          | 0.2934          | 0.3526          | 0.4238          | 0.6763          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.58             | 3.01           | 0.93           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles         | Granules        | Sand            |                 |                 |                 |                | Silt           |      |      |         | Clay |
|---|----------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|------|
|   |          |         |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |      |
| ○ |          |         |                 | 1.3             | 2.2             | 3.8             | 7.9             | 13.5            | 37.5           | 23.9           | 1.7  | 1.1  | 0.0     | 6.6  |
| × | LL       | PL      | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |      |
| ○ |          |         | 0.2645          | 0.0962          | 0.0845          | 0.0576          | 0.0399          | 0.0352          | 0.98           | 2.73           |      |      |         |      |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|  |                        |
|--|------------------------|
| <p><b>Project No.</b> L0912922    <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507826    <b>Sample Number:</b> WG382314-1</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>   | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912922

Location: 507826

Sample Number: WG382314-1

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 61.88  
 Tare Wt. = 4.30  
 Minus #200 from wash = 29.0%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 81.11                       | 0.00         | #4                 | 521.21                  | 521.02               | 99.8          | 0.2              |
|                             |              | #10                | 485.50                  | 484.26               | 98.2          | 1.8              |
|                             |              | #20                | 407.66                  | 405.42               | 95.5          | 4.5              |
|                             |              | #40                | 367.53                  | 364.03               | 91.2          | 8.8              |
|                             |              | #60                | 371.75                  | 366.16               | 84.3          | 15.7             |
|                             |              | #140               | 356.43                  | 342.86               | 67.5          | 32.5             |
|                             |              | #200               | 367.52                  | 345.77               | 40.7          | 59.3             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 40.7

Weight of hydrometer sample = 81.11

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0120         | 1.0122            | 0.0133 | 9.0 | 13.9       | 0.0351         | 9.8           | 90.2             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 8.2           | 91.8             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 7.4           | 92.6             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 6.6           | 93.4             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 6.6           | 93.4             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 6.6           | 93.4             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 5.8           | 94.2             |

## Fractional Components

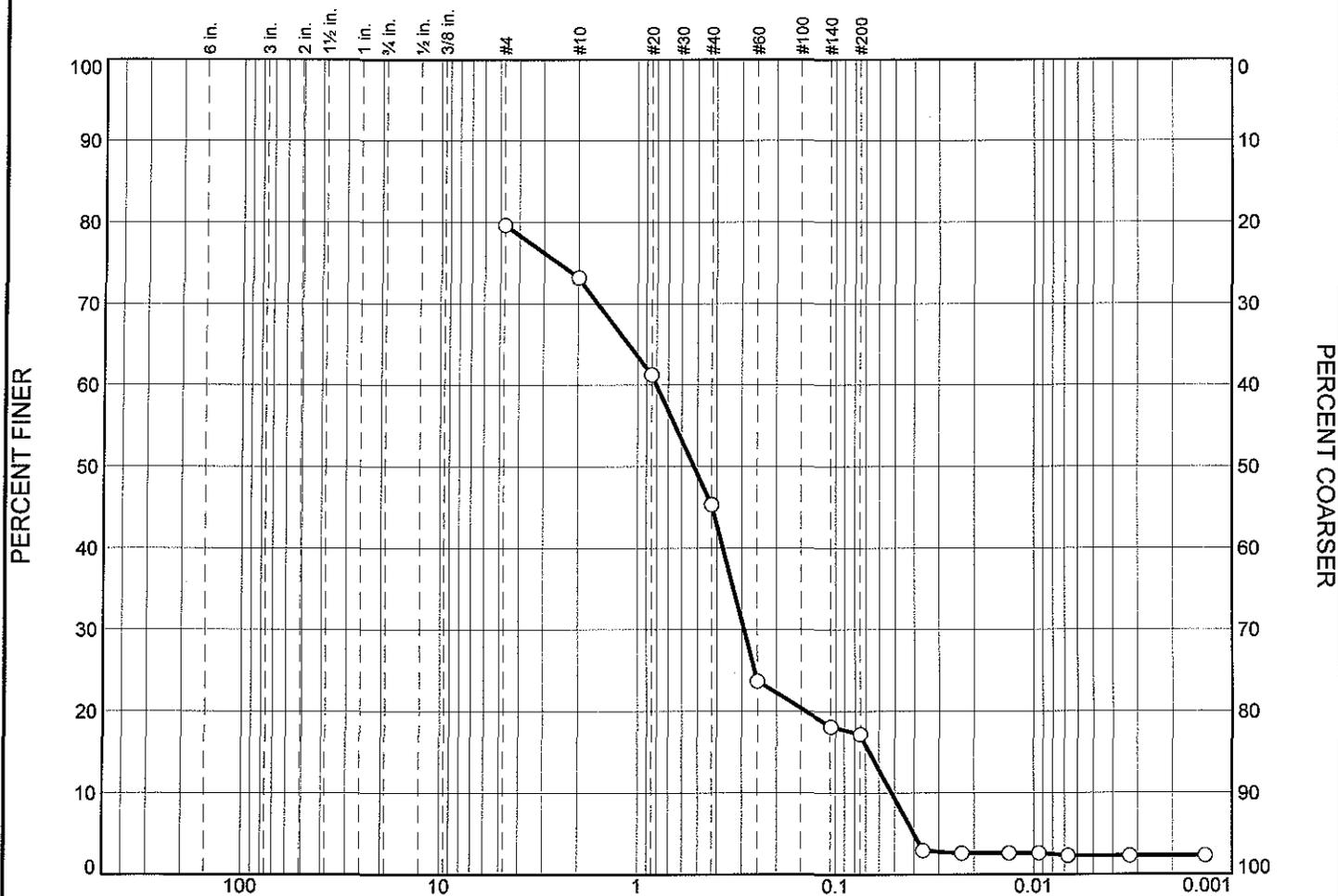
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 1.3      | 2.2     | 3.8  | 7.9  | 13.5 | 37.5    | 64.9  | 23.9 | 1.7  | 1.1  | 0.0     | 26.7  | 6.6  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0352          | 0.0399          | 0.0451          | 0.0576          | 0.0845          | 0.0962          | 0.2009          | 0.2645          | 0.3887          | 0.7875          |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 0.51             | 2.73           | 0.98           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|   | % Boulders | % Cobbles | % Pebbles | % Granules | % Sand  |        |        |        |         | % Silt |      |      |         | % Clay |
|---|------------|-----------|-----------|------------|---------|--------|--------|--------|---------|--------|------|------|---------|--------|
|   |            |           |           |            | V. Crs. | Crs.   | Med.   | Fine   | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |            |           |           | 5.2        | 9.7     | 14.4   | 25.4   | 4.5    | 5.6     | 10.8   | 0.2  | 0.2  | 0.1     | 2.3    |
| X | LL         | PL        | D85       | D60        | D50     | D30    | D15    | D10    | Cc      | Cu     |      |      |         |        |
| ○ |            |           |           | 0.8048     | 0.5208  | 0.2919 | 0.0671 | 0.0519 | 2.04    | 15.51  |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

|   |                        |
|---|------------------------|
| <p><b>Project No.</b> L0912922     <b>Client:</b> Woods Hole Group</p> <p><b>Project:</b> New Bedford Long Term Monitoring</p> <p>○ <b>Source of Sample:</b> 507911     <b>Sample Number:</b> L0912922-09</p> | <p><b>Remarks:</b></p> |
| <p><b>Alpha Analytical</b></p> <p><b>Mansfield, MA</b></p>  | <p><b>Figure</b></p>   |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912922

Location: 507911

Sample Number: L0912922-09

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 79.65  
 Tare Wt. = 3.98  
 Minus #200 from wash = 12.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 86.72                       | 0.00         | #4                 | 539.46                  | 521.80               | 79.6          | 20.4             |
|                             |              | #10                | 500.09                  | 494.50               | 73.2          | 26.8             |
|                             |              | #20                | 415.77                  | 405.42               | 61.3          | 38.7             |
|                             |              | #40                | 377.60                  | 363.79               | 45.3          | 54.7             |
|                             |              | #60                | 384.94                  | 366.16               | 23.7          | 76.3             |
|                             |              | #140               | 347.71                  | 342.86               | 18.1          | 81.9             |
|                             |              | #200               | 346.05                  | 345.26               | 17.2          | 82.8             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 17.2

Weight of hydrometer sample = 86.72

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 2.9           | 97.1             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 2.6           | 97.4             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 2.6           | 97.4             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 2.6           | 97.4             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 2.3           | 97.7             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 2.3           | 97.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.3           | 97.7             |

## Fractional Components

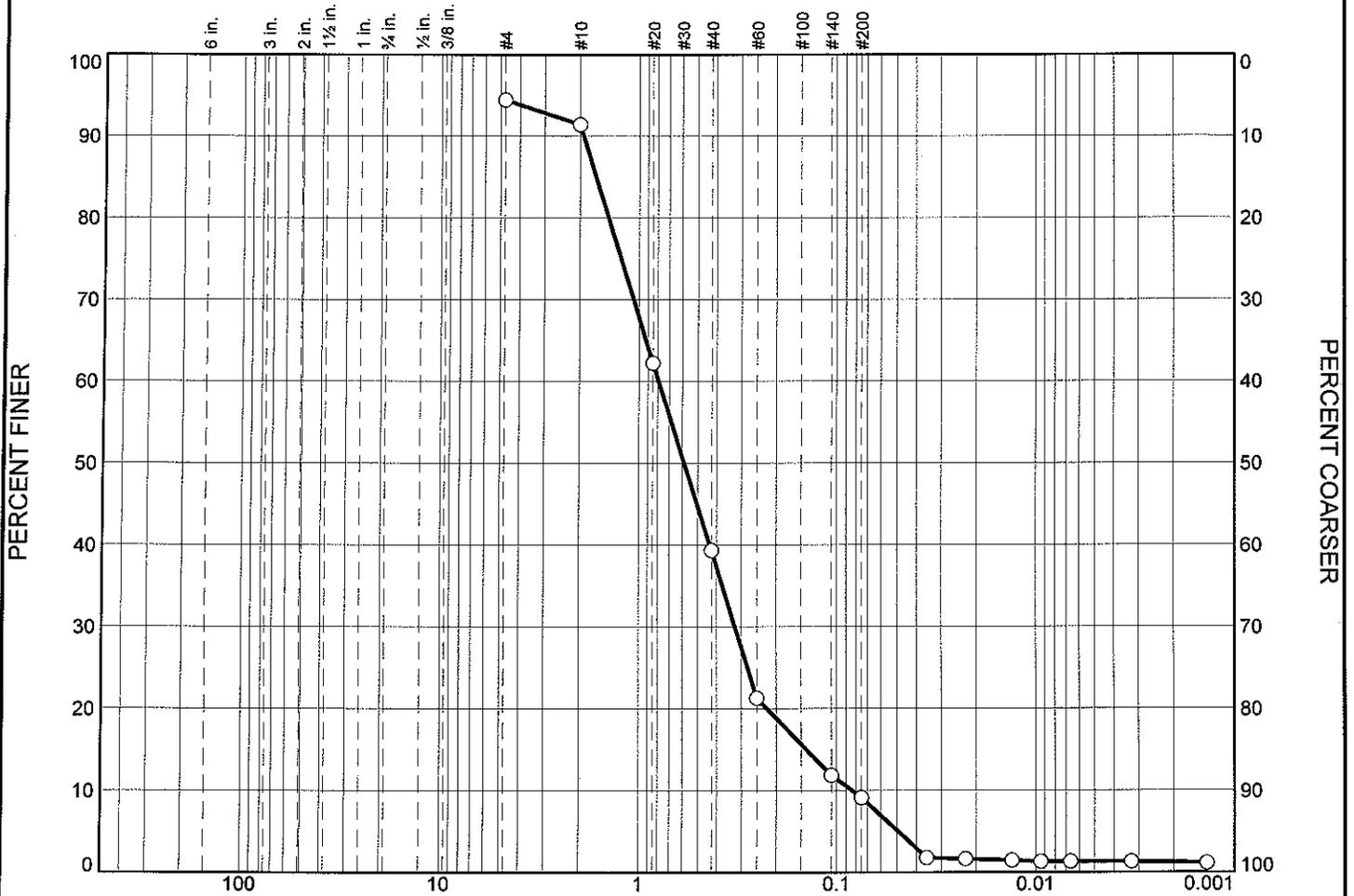
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 5.2      | 9.7     | 14.4 | 25.4 | 4.5  | 5.6     | 59.6  | 10.8 | 0.2  | 0.2  | 0.1     | 11.3  | 2.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0519          | 0.0671          | 0.1423          | 0.2919          | 0.5208          | 0.8048          |                 |                 |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.75             | 15.51          | 2.04           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

|                                     | % Boulders | % Cobbles | % Pebbles       | % Granules      | % Sand          |                 |                 |                 |                | % Silt         |      |      |         | % Clay |  |
|-------------------------------------|------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|------|------|---------|--------|--|
|                                     |            |           |                 |                 | V. Crs.         | Crs.            | Med.            | Fine            | V. Fine        | Crs.           | Med. | Fine | V. Fine |        |  |
| <input type="radio"/>               |            |           |                 | 2.4             | 23.6            | 23.1            | 23.4            | 7.7             | 6.3            | 5.6            | 0.2  | 0.2  | 0.0     | 1.3    |  |
| <input checked="" type="checkbox"/> | LL         | PL        | D <sub>85</sub> | D <sub>60</sub> | D <sub>50</sub> | D <sub>30</sub> | D <sub>15</sub> | D <sub>10</sub> | C <sub>c</sub> | C <sub>u</sub> |      |      |         |        |  |
| <input type="radio"/>               |            |           | 1.6573          | 0.7948          | 0.5871          | 0.3232          | 0.1415          | 0.0841          | 1.56           | 9.45           |      |      |         |        |  |

| Material Description  |  |  |  |  |  |  |  |  |  | USCS | AASHTO |
|-----------------------|--|--|--|--|--|--|--|--|--|------|--------|
| <input type="radio"/> |  |  |  |  |  |  |  |  |  |      |        |

|  |  |
|--|--|
| <b>Project No.</b> L0912922 <b>Client:</b> Woods Hole Group<br><b>Project:</b> New Bedford Long Term Monitoring<br><br><input type="radio"/> <b>Source of Sample:</b> 507912 <b>Sample Number:</b> L0912922-10 | <b>Remarks:</b><br><br><br><br><br><br><br><br><br><br><p style="text-align: right;"><b>Figure</b></p> |
| <b>Alpha Analytical</b><br><br><b>Mansfield, MA</b>  |  |

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group  
 Project: New Bedford Long Term Monitoring  
 Project Number: L0912922  
 Location: 507912  
 Sample Number: L0912922-10  
 Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 80.39  
 Tare Wt. = 4.16  
 Minus #200 from wash = 16.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 91.55                       | 0.00         | #4                 | 526.00                  | 520.91               | 94.4          | 5.6              |
|                             |              | #10                | 484.71                  | 481.94               | 91.4          | 8.6              |
|                             |              | #20                | 437.81                  | 411.08               | 62.2          | 37.8             |
|                             |              | #40                | 399.01                  | 378.06               | 39.3          | 60.7             |
|                             |              | #60                | 386.41                  | 369.86               | 21.3          | 78.7             |
|                             |              | #140               | 355.85                  | 347.22               | 11.8          | 88.2             |
|                             |              | #200               | 348.57                  | 346.07               | 9.1           | 90.9             |

## Hydrometer Test Data

Hydrometer test uses material passing #200  
 Percent passing #200 based upon complete sample = 9.1  
 Weight of hydrometer sample = 91.55  
 Automatic temperature correction  
 Composite correction (fluid density and meniscus height) at 20 deg. C = -0.04  
 Meniscus correction only = -3.0  
 Specific gravity of solids = 2.65  
 Hydrometer type = 151H  
 Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0110         | 1.0112            | 0.0133 | 8.0 | 14.2       | 0.0354         | 1.8           | 98.2             |
| 5.00                | 22.0            | 1.0100         | 1.0102            | 0.0133 | 7.0 | 14.4       | 0.0226         | 1.6           | 98.4             |
| 15.00               | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0132         | 1.5           | 98.5             |
| 30.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0094         | 1.3           | 98.7             |
| 60.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0067         | 1.3           | 98.7             |
| 250.00              | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0033         | 1.3           | 98.7             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 1.2           | 98.8             |

## Fractional Components

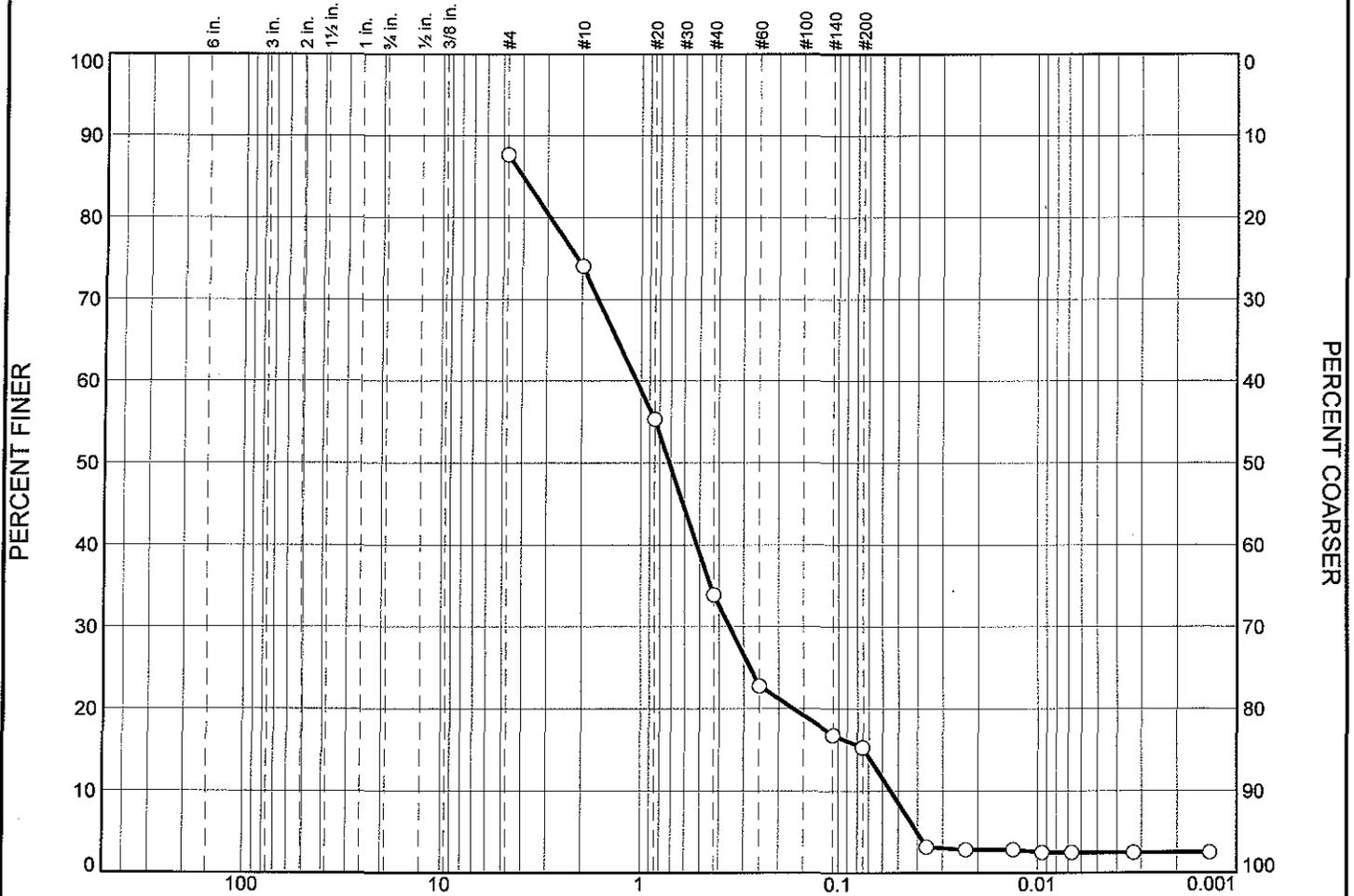
| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 2.4      | 23.6    | 23.1 | 23.4 | 7.7  | 6.3     | 84.1  | 5.6  | 0.2  | 0.2  | 0.0     | 6.0   | 1.3  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0841          | 0.1415          | 0.2230          | 0.3232          | 0.5871          | 0.7948          | 1.4314          | 1.6573          | 1.9188          |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.46             | 9.45           | 1.56           |

Alpha Analytical

# Particle Size Distribution Report



GRAIN SIZE - mm.

| % | Boulders | Cobbles | Pebbles |        | % Granules | % Sand  |        |        |      |         | % Silt |      |      |         | % Clay |
|---|----------|---------|---------|--------|------------|---------|--------|--------|------|---------|--------|------|------|---------|--------|
|   |          |         |         |        |            | V. Crs. | Crs.   | Med.   | Fine | V. Fine | Crs.   | Med. | Fine | V. Fine |        |
| ○ |          |         |         |        | 10.9       | 15.2    | 20.0   | 16.1   | 4.9  | 5.6     | 9.2    | 0.3  | 0.3  | 0.0     | 2.5    |
| × | LL       | PL      | D85     | D60    | D50        | D30     | D15    | D10    | Cc   | Cu      |        |      |      |         |        |
| ○ |          |         | 4.0070  | 1.0521 | 0.7155     | 0.3531  | 0.0737 | 0.0545 | 2.17 | 19.30   |        |      |      |         |        |

| Material Description | USCS | AASHTO |
|----------------------|------|--------|
| ○                    |      |        |

**Project No.** L0912922    **Client:** Woods Hole Group  
**Project:** New Bedford Long Term Monitoring

○ **Source of Sample:** 507926    **Sample Number:** L0912922-12

**Alpha Analytical**  
**Mansfield, MA**

**Remarks:**

**Figure**

## GRAIN SIZE DISTRIBUTION TEST DATA

1/28/2010

Client: Woods Hole Group

Project: New Bedford Long Term Monitoring

Project Number: L0912922

Location: 507926

Sample Number: L0912922-12

Sieve opening list: BS Bulk Sieve

## Sieve Test Data

Post #200 Wash Test Weights (grams): Dry Sample and Tare = 65.62  
 Tare Wt. = 3.98  
 Minus #200 from wash = 13.7%

| Dry Sample and Tare (grams) | Tare (grams) | Sieve Opening Size | Weight Retained (grams) | Sieve Weight (grams) | Percent Finer | Percent Retained |
|-----------------------------|--------------|--------------------|-------------------------|----------------------|---------------|------------------|
| 71.41                       | 0.00         | #4                 | 530.59                  | 521.79               | 87.7          | 12.3             |
|                             |              | #10                | 494.50                  | 484.78               | 74.1          | 25.9             |
|                             |              | #20                | 418.80                  | 405.42               | 55.3          | 44.7             |
|                             |              | #40                | 379.10                  | 363.79               | 33.9          | 66.1             |
|                             |              | #60                | 374.11                  | 366.16               | 22.8          | 77.2             |
|                             |              | #140               | 347.13                  | 342.86               | 16.8          | 83.2             |
|                             |              | #200               | 346.20                  | 345.14               | 15.3          | 84.7             |

## Hydrometer Test Data

Hydrometer test uses material passing #200

Percent passing #200 based upon complete sample = 15.3

Weight of hydrometer sample = 71.41

Automatic temperature correction

Composite correction (fluid density and meniscus height) at 20 deg. C = -.04

Meniscus correction only = -3.0

Specific gravity of solids = 2.65

Hydrometer type = 151H

Hydrometer effective depth equation:  $L = 16.294964 - 0.2645 \times R_m$ 

| Elapsed Time (min.) | Temp. (deg. C.) | Actual Reading | Corrected Reading | K      | Rm  | Eff. Depth | Diameter (mm.) | Percent Finer | Percent Retained |
|---------------------|-----------------|----------------|-------------------|--------|-----|------------|----------------|---------------|------------------|
| 2.00                | 22.0            | 1.0090         | 1.0092            | 0.0133 | 6.0 | 14.7       | 0.0361         | 3.2           | 96.8             |
| 5.00                | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0230         | 2.8           | 97.2             |
| 15.00               | 22.0            | 1.0080         | 1.0082            | 0.0133 | 5.0 | 15.0       | 0.0133         | 2.8           | 97.2             |
| 30.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0095         | 2.5           | 97.5             |
| 60.00               | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0067         | 2.5           | 97.5             |
| 250.00              | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0033         | 2.5           | 97.5             |
| 1440.00             | 22.0            | 1.0070         | 1.0072            | 0.0133 | 4.0 | 15.2       | 0.0014         | 2.5           | 97.5             |

## Fractional Components

| Boulders | Cobbles | Pebbles | Granules | Sand    |      |      |      |         |       | Silt |      |      |         |       | Clay |
|----------|---------|---------|----------|---------|------|------|------|---------|-------|------|------|------|---------|-------|------|
|          |         |         |          | V. Crs. | Crs. | Med. | Fine | V. Fine | Total | Crs. | Med. | Fine | V. Fine | Total |      |
|          |         |         | 10.9     | 15.2    | 20.0 | 16.1 | 4.9  | 5.6     | 61.8  | 9.2  | 0.3  | 0.3  | 0.0     | 9.8   | 2.5  |

| D <sub>10</sub> | D <sub>15</sub> | D <sub>20</sub> | D <sub>30</sub> | D <sub>50</sub> | D <sub>60</sub> | D <sub>80</sub> | D <sub>85</sub> | D <sub>90</sub> | D <sub>95</sub> |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 0.0545          | 0.0737          | 0.1683          | 0.3531          | 0.7155          | 1.0521          | 2.9162          | 4.0070          |                 |                 |

| Fineness Modulus | C <sub>u</sub> | C <sub>c</sub> |
|------------------|----------------|----------------|
| 2.83             | 19.30          | 2.17           |

Alpha Analytical

## Certificate/Approval Program Summary

Last revised December 15, 2009 – Mansfield Facility

The following list includes only those analytes/methods for which certification/approval is currently held. For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

### **Connecticut Department of Public Health Certificate/Lab ID: PH-0141.**

*Wastewater/Non-Potable Water* (Inorganic Parameters: pH, Turbidity, Conductivity, Alkalinity, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Vanadium, Zinc, Total Residue (Solids), Total Suspended Solids (non-filterable), Total Cyanide. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables, Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, PAHs, Haloethers, Chlorinated Hydrocarbons, Volatile Organics.)

*Solid Waste/Soil* (Inorganic Parameters: pH, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Vanadium, Zinc, Total Organic Carbon, Total Cyanide, Corrosivity, TCLP 1311. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Volatile Organics, Acid Extractables, Benzidines, Phthalates, Nitrosamines, Nitroaromatics & Cyclic Ketones, PAHs, Haloethers, Chlorinated Hydrocarbons.)

### **Florida Department of Health Certificate/Lab ID: E87814. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SM2320B, EPA 120.1, SM2510B, EPA 245.1, EPA 150.1, EPA 160.2, SM2540D, EPA 335.2, SM2540G, EPA 180.1. Organic Parameters: EPA 625, 608.)

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7470, 7471, 9045, 9014. Organic Parameters: EPA 8260, 8270, 8082, 8081.)

*Air & Emissions* (EPA TO-15.)

### **Louisiana Department of Environmental Quality Certificate/Lab ID: 03090. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 120.1, 150.1, 160.2, 180.1, 200.8, 245.1, 310.1, 335.2, 608, 625, 1631, 3010, 3015, 3020, 6020, 9010, 9014, 9040, SM2320B, 2510B, 2540D, 2540G, 4500CN-E, 4500H-B, Organic Parameters: EPA 3510, 3580, 3630, 3640, 3660, 3665, 5030, 8015 (mod), 3570, 8081, 8082, 8260, 8270, )

*Solid & Chemical Materials* (Inorganic Parameters: 6020, 7196, 7470, 7471, 7474, 9010, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015 (mod), EPA 3570, 1311, 3050, 3051, 3060, 3580, 3630, 3640, 3660, 3665, 5035, 8081, 8082, 8260, 8270.)

*Biological Tissue* (Inorganic Parameters: EPA 6020. Organic Parameters: EPA 3570, 3510, 3610, 3630, 3640, 8270.)

### **Maine Department of Human Services Certificate/Lab ID: MA0030.**

*Wastewater* (Inorganic Parameters: EPA 120.1, 300.0, SM 2320, 2510B, 2540C, 2540D, EPA 245.1. Organic Parameters: 608, 624.)

### **Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030.**

*Non-Potable Water* (Inorganic Parameters: SM4500H+B. Organic Parameters: EPA 624.)

### **New Hampshire Department of Environmental Services Certificate/Lab ID: 2206. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 200.8, 245.1, 1631E, 120.1, 150.1, 180.1, 310.1, 335.2, 160.2, SM2540D, 2540G, 4500CN-E, 4500H+B, 2320B, 2510B. Organic Parameters: EPA 625, 608.)

**New Jersey Department of Environmental Protection Certificate/Lab ID: MA015. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: SW-846 1312, 3010, 3020A, 3015, 6020, SM2320B, EPA 200.8, SM2540C, 2540D, 2540G, EPA 120.1, SM2510B, EPA 180.1, 245.1, 1631E, SW-846 9040B, 6020, 9010B, 9014 Organic Parameters: EPA 608, 625, SW-846 3510C, 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082 8260B, 8270C)

*Solid & Chemical Materials* (Inorganic Parameters: SW-846 6020, 9010B, 9014, 1311, 1312, 3050B, 3051, 3060A, 7196A, 7470A, 7471A, 9045C, 9060. Organic Parameters: SW-846 3580A, 5030B, 3035L, 5035H, 3630C, 3640A, 3660B, 3665A, 8081A, 8082, 8260B, 8270C, 3570, 8015B.)

*Atmospheric Organic Parameters* (EPA TO-15)

*Biological Tissue* (Inorganic Parameters: SW-846 6020 Organic Parameters: SW-846 8270C, 3510C, 3570, 3610B, 3630C, 3640A)

**New York Department of Health Certificate/Lab ID: 11627. *NELAP Accredited.***

*Non-Potable Water* (Inorganic Parameters: EPA 310.1, SM2320B, EPA 365.2, 160.1, EPA 160.2, SM2540D, EPA 200.8, 6020, 1631E, 245.1, 335.2, 9014, 150.1, 9040B, 120.1, SM2510B, EPA 376.2, 180.1, 9010B. Organic Parameters: EPA 624, 8260B, 8270C, 608, 8081A, 625, 8082, 3510C, 3511, 5030B.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 9040B, 9045C, SW-846 Ch7 Sec 7.3, EPA 6020, 7196A, 7471A, 7474, 9014, 9040B, 9045C, 9010B. Organic Parameters: EPA 8260B, 8270C, 8081A, DRO 8015B, 8082, 1311, 3050B, 3580, 3050B, 3035, 3570, 3051, 5035, 5030B.)

*Air & Emissions* (EPA TO-15.)

**Pennsylvania Department of Environmental Protection Certificate/Lab ID: 68-02089. *NELAP Accredited.***

*Non-Potable Water* (Organic Parameters: EPA 5030B, EPA 8260)

**Rhode Island Department of Health Certificate/Lab ID: LAO00299. *NELAP Accredited via LA-DEQ.***

Refer to MA-DEP Certificate for Non-Potable Water.

Refer to LA-DEQ Certificate for Non-Potable Water.

**Texas Commission of Environmental Quality Certificate/Lab ID: T104704419-08-TX. *NELAP Accredited.***

*Solid & Chemical Materials* (Inorganic Parameters: EPA 6020, 7470, 7471, 1311, 7196, 9014, 9040, 9045, 9060. Organic Parameters: EPA 8015, 8270, 8260, 8081, 8082.)

**U.S. Army Corps of Engineers**

**Department of Defense Certificate/Lab ID: L2217.01.**

*Non-Potable Water* (Inorganic Parameters: EPA 3005A,3020, 6020, 245.1, 245.7, 1631E, 7470A, 7474, 9014, 120.1, 9050A, 180.1, SM4500H-B, 2320B, 2510B, 2540D,9040. Organic Parameters: EPA 3510C, 5030B, 9010B, 624, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1311, 1312,3051, 6020, 747A, 7474, 9045C,9060, SM 2540G, ASTM D422-63. Organic Parameters: EPA 3580, 3570, 3540C, 5035, 8260B, 8270C, 8270 Alk-PAH, 8082, 8081A, 8015 (SHC), 8015 (DRO).

*Air & Emissions* (EPA TO-15.)

**Analytes Not Accredited by NELAP**

Certification is not available by NELAP for the following analytes: **8270C**: Biphenyl.



# CHAIN OF CUSTODY

PAGE OF

02021014:44

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: **20912922**

## Report Information Data Deliverables

FAX     EMAIL  
 ADEx     Add'l Deliverables

## Billing Information

Same as Client info    PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

**TOTAL # BOTTLES**

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| 1                              | 507711    | 9/22/09    | 15:50 | SE            | JB                 |
| 2                              | 507712    | 9/22/09    | 16:20 | SE            | JB                 |
| 3                              | 507713    | 9/22/09    | 16:28 | SE            | JB                 |
|                                | 507725    | 9/22/09    | 16:05 | SE            | JB                 |
| -4                             | 507726    | 9/22/09    | 16:05 | SE            | JB                 |
|                                | 507727    | 9/22/09    | 16:05 | SE            | JB                 |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |
|                                |           |            |       |               |                    |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

|                     |               |                     |               |
|---------------------|---------------|---------------------|---------------|
| Relinquished By:    | Date/Time     | Received By:        | Date/Time     |
| <i>James Bayak</i>  | 9/22/09 19:43 | <i>Paul Dilluit</i> | 9/22/09 19:43 |
| <i>Neeta Offay</i>  | 9/23/09 09:11 | <i>Paul Dilluit</i> | 9/23/09 9:15  |
| <i>Paul Dilluit</i> | 9/23/09 10:25 | <i>Paul Dilluit</i> | 9/23/09 10:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE OF

02021014:44

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard  Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA  
 TEL: 508-898-9220 TEL: 508-822-9300  
 FAX: 508-898-9193 FAX: 508-822-3288

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Level III data report and project specific EDD

Date Rec'd in Lab:

ALPHA Job #: 10912922

## Report Information Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State/Fed Program

Criteria

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                             |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**SAMPLE HANDLING**  
**Filtration**  
 Done  
 Not Needed  
 Lab to do  
**Preservation**  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |      | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|------|---------------|--------------------|
|                                |           | Date       | Time |               |                    |

|     |        |         |       |    |    |                                     |                                     |                                     |                                     |                          |                          |                          |                          |                          |                          |                          |                          |                          |          |   |
|-----|--------|---------|-------|----|----|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------|---|
| -9  | 507911 | 9/22/09 | 9:50  | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
| -10 | 507912 | 9/22/09 | 10:59 | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
|     | 507913 | 9/22/09 | 15:00 | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | ben gs   | 1 |
|     | 507925 | 9/22/09 | 10:10 | SE | JB | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed chem | 1 |
| -12 | 507926 | 9/22/09 | 10:10 | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | sed gs   | 1 |
|     | 507927 | 9/22/09 | 10:10 | SE | JB | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | sed arch | 1 |

| Container Type | G | G | G | - | - | - | - | - | - | - | - | - | - | - |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservative   | A | A | A | - | - | - | - | - | - | - | - | - | - | - |

| Relinquished By:   | Date/Time     | Received By:       | Date/Time     |
|--------------------|---------------|--------------------|---------------|
| <i>James Pugh</i>  | 9/22/09 19:43 | <i>Lee Weishar</i> | 9/22/09 19:43 |
| <i>Paul DeLuca</i> | 9/23/09 09:11 | <i>Paul DeLuca</i> | 9/23/09 09:15 |
| <i>Paul DeLuca</i> | 9/23/09 10:25 | <i>Paul DeLuca</i> | 9/23/09 10:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



# CHAIN OF CUSTODY

PAGE OF

02021014:44

Westborough, MA    Mansfield, MA  
 TEL: 508-898-9220    TEL: 508-822-9300  
 FAX: 508-898-9193    FAX: 508-822-3288

## Project Information

Project Name: NBH LTM V 2009

Project Location: New Bedford Harbor

Project #: TO-0018

Project Manager: Lee Weishar

ALPHA Quote #:

## Turn-Around Time

Standard     Rush (ONLY IF PRE-APPROVED)

Due Date:    Time:

## Client Information

Client: Woods Hole Group

Address: 81 Technology Park Drive

E. Falmouth, MA 02536

Phone: 508-540-8080

Fax: 508-540-1001

Email: lweishar@whgrp.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:  
 Level III data report and project specific EDD

Date Rec'd in Lab:    ALPHA Job #:

## Report Information Data Deliverables Billing Information

FAX     EMAIL     Same as Client info    PO #:  
 ADEx     Add'l Deliverables

## Regulatory Requirements/Report Limits

State/Fed Program: fed    Criteria:

## ANALYSIS

| total PCB congeners NOAA 18         | TOC                                 | grain size                          | archive                  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
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**SAMPLE HANDLING**  
 Filtration  
 Done  
 Not Needed  
 Lab to do  
 Preservation  
 Lab to do  
 (Please specify below)

**TOTAL # BOTTLES**

| ALPHA Lab ID<br>(Lab Use Only) | Sample ID | Collection |       | Sample Matrix | Sampler's Initials |
|--------------------------------|-----------|------------|-------|---------------|--------------------|
|                                |           | Date       | Time  |               |                    |
| -5                             | 507811    | 9/22/09    | 13:18 | SE            | JB                 |
| -6                             | 507812    | 9/22/09    | 13:56 | SE            | JB                 |
| -7                             | 507813    | 9/22/09    | 14:25 | SE            | JB                 |
|                                | 507825    | 9/22/09    | 13:40 | SE            | JB                 |
| -8                             | 507826    | 9/22/09    | 13:40 | SE            | JB                 |
|                                | 507827    | 9/22/09    | 13:40 | SE            | JB                 |
|                                | 507845    | 9/22/09    | 13:40 | SE            | JB                 |
| -8                             | 507846    | 9/22/09    | 13:40 | SE            | JB                 |

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Container Type | G | G | G | G | - | - | - | - | - | - | - | - | - |
| Preservative   | A | A | A | A | - | - | - | - | - | - | - | - | - |

|                  |               |              |               |
|------------------|---------------|--------------|---------------|
| Relinquished By: | Date/Time     | Received By: | Date/Time     |
| James Baych      | 9/22/09 1943  | Paul Hilbert | 9/22/09 19:43 |
| Paul Hilbert     | 9/23/09 09:12 | Paul Hilbert | 9/23/09 9:15  |
| Paul Hilbert     | 9/23/09 10:25 | Paul Hilbert | 9/23/09 10:25 |

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

**APPENDIX J. BENTHIC INFAUNAL REPORT FROM THE 2009  
NBH LTM V SURVEY**

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**NEW BEDFORD HARBOR LONG TERM  
MONITORING PROGRAM  
MACROBENTHIC COMMUNITY ASSESSMENT  
LABORATORY METHODS (2009)**

**JANUARY 2009**

**NEW BEDFORD HARBOR LONG TERM  
MONITORING PROGRAM  
MACROBENTHIC COMMUNITY ASSESSMENT  
LABORATORY METHODS (2009)**

**Prepared for  
WOODS HOLE GROUP  
81 Technology Park Drive  
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Bedford, NH 03110**

**R-21814.001**

**January 2010**

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ATTACHMENT — EXCEL DATA FILE

# **New Bedford Harbor Long Term Monitoring Program**

## **1.0 INTRODUCTION**

Normandeau Associates, under contract with the Woods Hole Group of E. Falmouth, MA, has completed the macroinvertebrate community assessment monitoring for the 2009 New Bedford Harbor Long-Term Monitoring Program. The purpose of this report is to present the methods for the laboratory phase of the program. The actual monitoring results were presented in an Excel data file to Woods Hole Group.

Laboratory procedures were carried out according to protocols established for the Environmental Monitoring and Assessment Program (EMAP) for estuaries. A complete description of those procedures is presented in Environmental Monitoring and Assessment Program (EMAP) Laboratory Methods Manual – Estuaries Volume 1 – *Biological and Physical Analyses*, Strobel (August 1995) Section 3.

## **2.0 SAMPLE TRACKING AND HANDLING**

Samples were retrieved ready for transport to our laboratory; field sieved through a 0.5 mm mesh screen, stained with Rose Bengal and preserved in 6% buffered formalin.

Upon receipt, samples were examined for damage and checked against the Chain-of-Custody form and then inventoried in the Sort Log (Appendix A). All samples listed on the Chain-of-Custody forms were received in good condition.

## **3.0 SAMPLE SORTING**

Samples were washed through a 0.5mm mesh screen. To facilitate sorting efficiency, samples that had heterogeneously-sized residue and /or organisms were washed through a series of graduated sieves, with the finest sieve being 0.5mm mesh and then elutriated to separate heavy and light fractions of the sample. Macrofauna was sorted from the debris and separated into major taxonomic groups using a dissecting microscope; specimens were preserved in 70% ethanol. Heavy sample material greater than 2.0mm was pan sorted with overhead magnification. Sample processing information was recorded in the Sort Log (Appendix A).

Sorters were instructed and supervised on the proper project procedure for sample wash down and sorting. Each sorter's samples were listed in order of completion on the QC Sample Batch Listing form (Appendix A). At least the first three samples undertaken by each sorter were rechecked by the Quality Control Supervisor. A minimum of 10% (one out of each batch of ten samples) of each sorter's subsequent samples were resorted with results recorded on the QC Sample Resort sheet (Appendix A). Any work found to be of insufficient quality resulted in rechecking the samples and retraining the sorter; as specified in Strobel et al. (1995).

A total of 158 samples were sorted. To meet the program turn around time, a large number of sorters were involved, resulting in a greater than usual number of training QC's. Following training, 12 samples were resorted as a quality control check and results are as follows:

## **New Bedford Harbor Long Term Monitoring Program**

| <b>Sorting Efficiency</b> | <b># Samples</b> |
|---------------------------|------------------|
| 100 - 95% range           | 11               |
| 96 – 90% range            | 0                |
| <90% range                | 1                |

Sorting efficiency resulted in one sample requiring corrective action; retraining in the recognition of one specific organism and a recheck for the species in all samples conducted in the batch of ten as well as any applicable samples sorted prior to the batch of ten. All specimens were included for subsequent identification.

### **4.0 TAXONOMY**

Taxonomists specializing in specific macroinvertebrate phyla had samples distributed to them for identification, enumeration and recording on the Data Sheets (Appendix A). Data sheets were developed based on the species list from the previous phases of the Long-Term Monitoring program to facilitate recording. Level of identification, generally Lowest Practical Taxon but in some cases stipulated to a higher classification per Strobel et al. (1995) was adhered to, with the exceptions noted below. The exceptions listed in the Results: 2009 Data Listing represents the level of identification found in this year's Data File.

| <b>Group</b>        | <b>Request: Strobel et al.(1995)</b> | <b>Results: 2009 Data Listing</b> |
|---------------------|--------------------------------------|-----------------------------------|
| Nematodes           | ignore                               | Nematodes – noted as Present (P)  |
| Copepods (benthic)* | Ignore                               | LPT                               |
| Ostracods           | Ignore                               | Class Ostracoda                   |
| Nemertinea          | Phylum                               | LPT                               |
| Sipuncula           | Phylum                               | LPT                               |
| Anthozoa            | Class                                | LPT                               |

\*harpacticoid and cyclopoid

Maintaining taxonomic consistency across the New Bedford Harbor Program years was accomplished through examination of voucher specimens, referencing taxonomic keys and current hardcopy and electronic literature and through verbal communication among taxonomists. Species on the List of 2009 Species Not Found in New Bedford Harbor Look-up Table (Appendix B) were new to the New Bedford Harbor program this year; any discrepancies between the 2009 species list and previous years are specifically noted.

Quality control was performed on 10% (one out of each batch of ten samples) of the taxonomists samples. A total of 158 samples were identified by the taxonomists with a total of 16 being re-identified. Three taxonomists were involved in the identification of different phyla of each sample, resulting in a total of 48 (16 samples x 3 taxonomists) by-phyla re-identification checks. Each of these 48 re-identified samples was treated separately. Taxonomist's samples were listed in order of completion on the QC Sample Batch Listing form (Appendix A) and results were entered on the QC Sample Re-identification sheet (Appendix A). Any work found to be of insufficient quality resulted in the retraining of the taxonomist and possibly the checking of additional samples from a batch of ten samples; as specified in Strobel et al. (1995).

## ***New Bedford Harbor Long Term Monitoring Program***

---

Results for the 48 by-phyla sample re-identifications are as follows:

| <b>Taxonomy Efficiency</b> | <b># Samples</b> |
|----------------------------|------------------|
| 100 - 95% range            | 38               |
| 96 – 90% range             | 6                |
| <90% range                 | 4                |

Taxonomic accuracy results were reviewed by the laboratory Quality Control Supervisor and resulted in four samples requiring corrective action. Three of the failures at the <90% accuracy level resulted from samples where very low numbers of specimens or where the specimens were lost in transfer; resulting in a high error percentage. A review of proper data transcription procedures between the taxonomist and the Quality Control Supervisor was conducted. The fourth failure was a species specific identification error and required a recheck of all samples conducted in the batch of ten as well as any applicable samples identified prior to the batch of ten. Program protocol, Strobel et al. (1995), required adjustments to the data for any identification errors.

A voucher collection of 60 additional taxa was established for this project. A listing of these additional species, by station/replicate, is noted on the Voucher Collection-2009 list (Appendix C).

### **5.0 DATA MANAGEMENT**

Normandeau's Technical Information Services group has conducted marine benthic macrofaunal identification for Long Term Monitoring programs in the past and our programmers are familiar with the EMAP database requirements.

Original data sheets were checked for completeness and legibility before being submitted for data entry. Formats designed to comply with the project-specific dataset specifications were used to constrain data entry, and data verification was provided through double data entry. This feature ensured that entry errors were caught and corrected as the operators keyed the data.

Following entry into the database, quality control error checks, including project-specific checking routines based on logical checks and random sampling of records for comparison between database records and laboratory datasheets, were completed. QC/QA was conducted followed ANSI ASQC Z1.4 (1993) standards. For the 4224 records a total of 200 randomly selected Data Points were checked; one error (two allowed), was detected and corrected.

### **6.0 SAMPLE HANDLING**

Normandeau will retain processed and archived samples for one year following report acceptance at which time, with authorization, disposal of samples will occur. The Program Voucher Specimen Collection, including the new specimens from 2009, will be retrieved by the EPA.

### **7.0 LITERATURE CITED**

US EPA. 1995. Environmental Monitoring and Assessment Program (EMAP): Laboratory Methods Manual – Estuaries, Volume I: *Biological and Physical Analyses*, Office of Research and Development, Narragansett, RI. EPA/620/R-95/008.

**APPENDIX A**

**Logs, Data and Quality Control Forms**





New Bedford Harbor Long Term Monitoring Program

**Data Form - QC SAMPLE BATCH LISTING FORM**

**Sorter/Taxonomist** \_\_\_\_\_

**Batch For** \_\_\_\_\_  
**Sample Month** \_\_\_\_\_

|    |    |    |    |
|----|----|----|----|
|    |    |    |    |
| 1  | 11 | 21 | 31 |
| 2  | 12 | 22 | 32 |
| 3  | 13 | 23 | 33 |
| 4  | 14 | 24 | 34 |
| 5  | 15 | 25 | 35 |
| 6  | 16 | 26 | 36 |
| 7  | 17 | 27 | 37 |
| 8  | 18 | 28 | 38 |
| 9  | 19 | 29 | 39 |
| 10 | 20 | 30 | 40 |

**Necessary Remedial Action:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Comments:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**New Bedford Harbor Long Term Monitoring Program**

**Data Form - QC SAMPLE RESORT SHEET**

Project \_\_\_\_\_

Station/Rep \_\_\_\_\_

Collection Date \_\_\_\_\_

Original Sorter \_\_\_\_\_

| Additional Organisms Found |        |      |        |
|----------------------------|--------|------|--------|
| Taxa                       | Number | Taxa | Number |
|                            |        |      |        |
|                            |        |      |        |
|                            |        |      |        |
|                            |        |      |        |

Total organisms originally sorted \_\_\_\_\_

Total additional organisms found \_\_\_\_\_

% error \_\_\_\_\_

Resorted by \_\_\_\_\_

QC OK'd by \_\_\_\_\_

Any remedial action necessary:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_









# New Bedford Harbor Long Term Monitoring Program

Project: New Bedford Harbor

POLYCHAETA

Code: 21814.002

Station:        -       

Beard:        Date: 11/     /     /09

| SPECIES NAME                                | SPECIES CODE | COND. | DF | HP | SA | BH | KP |  |  |
|---|--------------|-------|----|----|----|----|----|--|--|
| <b>OENONIDAE</b>                            | 3980         |       |    |    |    |    |    |  |  |
| <i>Dritoneis longa</i>                      | 4685         |       |    |    |    |    |    |  |  |
| <i>Arabella incolor</i>                     | 4626         |       |    |    |    |    |    |  |  |
| <i>Notocirrus spiniferus</i>                | 4613         |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
| <b>DORVILLEIDAE</b>                         | 4673         |       |    |    |    |    |    |  |  |
| <i>Dorvillea (Schistomeringos) annulata</i> | 3497         |       |    |    |    |    |    |  |  |
| <i>Protodorvillea gaspeensis</i>            | 1825         |       |    |    |    |    |    |  |  |
| <i>Parugia caeca</i>                        | 1828         |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
| <b>ORBINIIDAE</b>                           | 2072         |       |    |    |    |    |    |  |  |
| <i>Scoloplos rubra</i>                      | 3959         |       |    |    |    |    |    |  |  |
| <i>Orbinia swani</i>                        | 100          |       |    |    |    |    |    |  |  |
| <i>Leitoscoloplos fragilis</i>              | 102          |       |    |    |    |    |    |  |  |
| <i>Leitoscoloplos robustus</i>              | 381          |       |    |    |    |    |    |  |  |
| <i>Leitoscoloplos sp.</i>                   | 411          |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
| <b>PARAONIDAE</b>                           | 2062         |       |    |    |    |    |    |  |  |
| <i>Aricidea (Acmira) catherinae</i>         | 95           |       |    |    |    |    |    |  |  |
| <i>Aricidea (Acmira) cerruti</i>            | 4623         |       |    |    |    |    |    |  |  |
| <i>Aricidea quadrilobata</i>                | 657          |       |    |    |    |    |    |  |  |
| <i>Aricidea sp.</i>                         | 428          |       |    |    |    |    |    |  |  |
| <i>Cirrophorus lyriformis</i>               | 4617         |       |    |    |    |    |    |  |  |
| <i>Levinsenia gracilis</i>                  | 93           |       |    |    |    |    |    |  |  |
| <i>Paraonis fulgens</i>                     | 94           |       |    |    |    |    |    |  |  |
| <i>Cirrophorus furcatus</i>                 | 4617         |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
| <b>CHAETOPTERIDAE</b>                       | 4620         |       |    |    |    |    |    |  |  |
| <i>Spiochaetopterus oostarum</i>            | 4887         |       |    |    |    |    |    |  |  |
| <i>Spiochaetopterus oculatus</i>            | 3585         |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |
|   |              |       |    |    |    |    |    |  |  |



# New Bedford Harbor Long Term Monitoring Program

Project: New Bedford Harbor

POLYCHAETA

Code: 21814.002

Station:        -       

Beard:        Date: 11/        /09

| SPECIES NAME                      | SPECIES CODE | COND. | DF | HP | SA | BH | KP |  |  |  |
|-----------------------------------|--------------|-------|----|----|----|----|----|--|--|--|
| <b>CAPITELLIDAE</b>               | 2078         |       |    |    |    |    |    |  |  |  |
| <i>Capitella jonesi</i>           | 4833         |       |    |    |    |    |    |  |  |  |
| <i>Capitella capitata</i>         | 78           |       |    |    |    |    |    |  |  |  |
| <i>Heteromastus filiformis</i>    | 391          |       |    |    |    |    |    |  |  |  |
| <i>Notomastus latericeus</i>      | 663          |       |    |    |    |    |    |  |  |  |
| <i>Mediomastus ambiseta</i>       | 1779         |       |    |    |    |    |    |  |  |  |
| <i>Mediomastus californiensis</i> | 3492         |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
| <b>OWENIIDAE</b>                  | 3888         |       |    |    |    |    |    |  |  |  |
| <i>Owenia fusiformis</i>          | 107          |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
| <b>MALDANIDAE</b>                 | 2075         |       |    |    |    |    |    |  |  |  |
| <i>Maldane sarsi</i>              | 84           |       |    |    |    |    |    |  |  |  |
| <i>Asychis elongata</i>           | 664          |       |    |    |    |    |    |  |  |  |
| <i>Clymenella torquata</i>        | 82           |       |    |    |    |    |    |  |  |  |
| <i>Clymenella zonalis</i>         | 3916         |       |    |    |    |    |    |  |  |  |
| <i>Euclymene collaris</i>         | 83           |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
| <b>SABELLARIIDAE</b>              |              |       |    |    |    |    |    |  |  |  |
| <i>Sabellaria vulgans</i>         | 3586         |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
| <b>PECTINARIIDAE</b>              | 2063         |       |    |    |    |    |    |  |  |  |
| <i>Pectinaria gouldii</i>         | 770          |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
| <b>FLABELLIGERIDAE</b>            | 1123         |       |    |    |    |    |    |  |  |  |
| <i>Pherusa affinis</i>            | 434          |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |
| <b>SCALIBREGMIDAE</b>             | 9113590      |       |    |    |    |    |    |  |  |  |
| <i>Scalibregma inflatum</i>       | 80           |       |    |    |    |    |    |  |  |  |
| <i>Travisia forbesii</i>          | 1909         |       |    |    |    |    |    |  |  |  |
|                                   |              |       |    |    |    |    |    |  |  |  |

# New Bedford Harbor Long Term Monitoring Program

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Project: New Bedford Harbor

POLYCHAETA

Code: 21814.002

Station: \_\_\_\_\_ - \_\_\_\_

Board: \_\_\_\_\_ Date: 11/\_\_\_\_/09

| SPECIES NAME                  | SPECIES CODE | COND. | DF | HP | SA | BH | KP |  |  |  |
|-------------------------------|--------------|-------|----|----|----|----|----|--|--|--|
| <b>AMPHARETIDAE</b>           | 2076         |       |    |    |    |    |    |  |  |  |
| <i>Ampharete finmarchica</i>  | 745          |       |    |    |    |    |    |  |  |  |
| <i>Melinna cristata</i>       | 665          |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
| <b>TEREBELLIDAE</b>           | 1338         |       |    |    |    |    |    |  |  |  |
| <i>Pista maculata</i>         | 114          |       |    |    |    |    |    |  |  |  |
| <i>Pista palmata</i>          | 1793         |       |    |    |    |    |    |  |  |  |
| <i>Polycirrus eximius</i>     | 1786         |       |    |    |    |    |    |  |  |  |
| <i>Polycirrus medusa</i>      | 1903         |       |    |    |    |    |    |  |  |  |
| <i>Polycirrus phosphoreus</i> | 3646         |       |    |    |    |    |    |  |  |  |
| <i>Polycirrus sp.</i>         | 1826         |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
| <b>SABELLIDAE</b>             | 2079         |       |    |    |    |    |    |  |  |  |
| <i>Potamilla reniformis</i>   | 118          |       |    |    |    |    |    |  |  |  |
| <i>Sabella microphthalma</i>  | 668          |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
| <b>SERPULIDAE</b>             | 2067         |       |    |    |    |    |    |  |  |  |
| <i>Hydroides dianthus</i>     | 1948         |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
| <b>PILARGIIDAE</b>            |              |       |    |    |    |    |    |  |  |  |
| <i>Cabira incerta</i>         | 4838         |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
| <b>MAGELONIDAE</b>            |              |       |    |    |    |    |    |  |  |  |
| <i>Magelona sp.</i>           | 4694         |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |
| <b>EUNICIDAE</b>              | 1248         |       |    |    |    |    |    |  |  |  |
|                               |              |       |    |    |    |    |    |  |  |  |















**APPENDIX B**

**Species Not Found in New Bedford Harbor  
Look-up Table**

**New Bedford Harbor Long Term Monitoring Program**

**2009 Species Not Found in New Bedford Harbor Look-up Table**

| Species 2009                    | Look-Up Table                | Found in I.T.I.S. |
|---------------------------------|------------------------------|-------------------|
| <b>Porifera</b>                 |                              |                   |
| <i>Haliclona loosanoffi</i>     |                              | Y                 |
| <b>Hydrozoa</b>                 |                              |                   |
| Bougainvilliidae                |                              | Y                 |
| <i>Obelia dichotoma</i>         |                              | Y                 |
| <i>Clytia hemisphaerica</i>     |                              | Y                 |
| <i>Halecium halecinum</i>       |                              | Y                 |
| <i>Lovenella gracilis</i>       |                              | Y                 |
| <b>Turbellaria</b>              |                              |                   |
| <i>Stylochus ellipticus</i>     |                              | Y                 |
| <i>Euplana gracilis</i>         |                              | Y                 |
| <b>Nemertinea</b>               |                              |                   |
| <i>Procephalothrix spiralis</i> |                              | Y                 |
| <i>Lineus ruber</i>             |                              | Y                 |
| <i>Micrura</i> sp.              | <i>Micrura</i> spp.          | N                 |
| <i>Amphiporus</i> sp.           |                              | N                 |
| <i>Zygonemertes virescens</i>   |                              | Y                 |
| <i>Tetrastemma candidum</i>     |                              | Y                 |
| <b>Nematoda</b>                 |                              |                   |
| Nematoda                        | N/A                          | Y                 |
| <b>Annelida</b>                 |                              |                   |
| <i>Harmothoe lunulata</i>       |                              | Y                 |
| Pilargidae                      |                              | Y                 |
| <i>Autolytus</i> sp.            |                              | N                 |
| <i>Pionosyllis</i> sp.          |                              | N                 |
| <i>Syllis gracilis</i>          |                              | Y                 |
| <i>Syllides convoluta</i>       |                              | Y                 |
| <i>Aglaophamus neotenus</i>     |                              | Y                 |
| Oeonidae                        |                              | Y                 |
| <i>Dipolydora</i> sp.           |                              | N                 |
| <i>Cirratulus grandis</i>       |                              | Y                 |
| <i>Dodecaceria coralii</i>      |                              | Y                 |
| Oweniidae                       |                              | Y                 |
| <i>Asabellides oculata</i>      |                              | Y                 |
| <i>Terebella lapidaria</i>      |                              | Y                 |
| <i>Potamilla reniformis</i>     |                              | Y                 |
| <i>Demonax microphthalmus</i>   | <i>Sabella microphthalma</i> | Y                 |
| <i>Polygordius</i> sp.          | <i>Archiannelida</i>         | N                 |
| <b>Mollusca</b>                 |                              |                   |
| <i>Cerithiopsis emersonii</i>   |                              | Y                 |
| <i>Epitonium multistriatum</i>  |                              | Y                 |
| <i>Epitonium dallianum</i>      |                              | Y                 |
| <i>Epitonium angulatum</i>      |                              | Y                 |
| <i>Melanella oleacea</i>        |                              | N                 |
| <i>Melanella sarsi</i>          |                              | Y                 |

## New Bedford Harbor Long Term Monitoring Program

| Species 2009                     | Look-Up Table                | Found in I.T.I.S. |
|----------------------------------|------------------------------|-------------------|
| <i>Boreotrophon clathratus</i>   |                              | Y                 |
| <i>Busycon canaliculatum</i>     |                              | Y                 |
| <i>Odostomia striata</i>         |                              | Y                 |
| Sacoglossa                       |                              | Y                 |
| <i>Ancula gibbosa</i>            |                              | Y                 |
| <i>Doto coronata</i>             |                              | Y                 |
| <i>Coryphella</i> sp.            |                              | N                 |
| <i>Anadara ovalis</i>            |                              | Y                 |
| <i>Clinocardium ciliatum</i>     |                              | Y                 |
| <i>Tagelus divisus</i>           |                              | Y                 |
| <i>Pandora glacialis</i>         |                              | Y                 |
| <i>Pandora inflata</i>           |                              | Y                 |
| <i>Periploma leanum</i>          |                              | Y                 |
| <b>Arthropoda</b>                |                              |                   |
| <i>Callipallene brevirostris</i> |                              | Y                 |
| <i>Anoplodactylus petiolatus</i> |                              | Y                 |
| Cyclopoida                       |                              | Y                 |
| <i>Hemicyclops</i> sp.           |                              | N                 |
| <i>Leptinogaster major</i>       |                              | Y                 |
| <i>Edotia</i> sp.                |                              | N                 |
| <i>Batea catharinensis</i>       | <i>Batea catherinensis</i>   | Y                 |
| <i>Cerapus</i> sp. A             |                              | N                 |
| <i>Hippolyte</i> sp.             | <i>Hippolyte</i> spp.        | N                 |
| <i>Gilvossius setimanus</i>      | <i>Callianassa atlantica</i> | Y                 |
| <b>Sipunculida</b>               |                              |                   |
| <i>Golfingia</i> sp.             |                              | N                 |
| <b>Ectoprocta</b>                |                              |                   |
| <i>Bowerbankia</i> sp.           |                              | N                 |
| <i>Aeverrillia setigera</i>      |                              | Y                 |
| <i>Aetea sica</i>                |                              | Y                 |
| <i>Conopeum truitti</i>          |                              | Y                 |
| <i>Electra pilosa</i>            |                              | Y                 |
| <i>Bugula stolonifera</i>        |                              | Y                 |
| <b>Entoprocta</b>                |                              |                   |
| <i>Barentsia gracilis</i>        |                              | Y                 |
| <b>Holothuroidea</b>             |                              |                   |
| <i>Sclerodactyla briareus</i>    |                              | Y                 |
| <i>Pentamera calcigera</i>       |                              | Y                 |
| <b>Chordata</b>                  |                              |                   |
| Ascidiacea                       |                              | Y                 |

**APPENDIX C**

**List of Voucher Specimens**

## New Bedford Harbor Long Term Monitoring Program

### Voucher Collection 2009 Specimens added to the New Bedford Harbor Voucher Collection

| Species                  | Sta/Rep      |
|--------------------------|--------------|
| <b>Porifera</b>          |              |
| Haliclona loosanoffi     | 323-2        |
| <b>Hydrozoa</b>          |              |
| Clytia hemisphaerica     | 202-1        |
| Halecium sp.             | 241-2        |
| Lovenella gracilis       | 230-2        |
| Obelia dichotoma         | 202-1        |
| <b>Turbellaria</b>       |              |
| Stylochus ellipticus     | 339-2        |
| <b>Nemertinea</b>        |              |
| Amphiporus cruentatus    | 335-1        |
| Carinoma tremaphorus     | 352-2        |
| Procephalothrix spiralis | 352-1        |
| Tetrastemma candidum     | 352-1        |
| Zygonemertes virescens   | 250-2        |
| <b>Annelida</b>          |              |
| Autolytus prolifer       | 202-1        |
| Dipolydora giardi        | 335-1        |
| Dipolydora sp.           | 352-1        |
| Harmothoe lunulata       | 352-1        |
| Paranaitis speciosa      | 242-1        |
| Pionosyllis sp.          | 335-2        |
| Poldora sp.              | 154-1, 236-1 |
| Syllides convoluta       | 151-2        |
| Syllis gracilis          | 250-1        |
| Terebella lapidaria      | 250-1        |
| <b>Mollusca</b>          |              |
| Anachis lafresnayi       | 304-1        |
| Anadara ovalis           | 332-1        |
| Anadara transversa       | 146-2        |
| Anomia simplex           | 250-1        |
| Boreotrophon clathratus  | 236-1, 236-2 |
| Busycon canaliculatum    | 236-2        |
| Busycon carica           | 306-2        |
| Cerithiopsis emersonii   | 250-2        |
| Chaetopleura apiculata   | 333-2        |
| Corbula contracta        | 352-1        |
| Coryphella sp.           | 338-2        |
| Cumingia tellinoides     | 333-2, 304-1 |
| Cylichna oryza           | 331-1        |
| Epitonium multistriatum  | 352-2, 341-2 |
| Epitonium dallianum      | 331-1        |
| Epitonium angulatum      | 311-1        |
| Eupleura caudata         | 325-1        |

## New Bedford Harbor Long Term Monitoring Program

| <b>Species</b>          | <b>Sta/Rep</b> |
|-------------------------|----------------|
| Haminoe solitaria       | 331-1          |
| Laevicardium mortoni    | 333-1          |
| Melanella conoidea      | 306-2          |
| Melanella sarsi         | 339-2          |
| Odostomia striata       | 352-1          |
| Periploma leanum        | 253-2          |
| Petricola pholadiformis | 146-2          |
| Rictaxis punctostriatus | 311-2          |
| <b>Sacoglossa</b>       |                |
| Seila adamsi            | 250-2          |
| Solemya velum           | 306-2          |
| Tagelus divisus         | 241-1          |
| Urosalpinx cinerea      | 204-2          |
| <b>Arthropoda</b>       |                |
| Hemicyclops sp.         | 152-1          |
| Ianiropsis sp. 1        | 250-2          |
| Leptinogaster major     | 241-1          |
| Pinnixa chaetoptera     | 349-2          |
| <b>Sipunculida</b>      |                |
| Golfingia sp.           | 352-2          |
| <b>Ectoprocta</b>       |                |
| Aetea sica              | 349-1          |
| Aeverillia setegera     | 241-2          |
| Bugula stolonifera      | 204-2          |
| Electra pilosa          | 318-2          |
| <b>Holothuroidea</b>    |                |
| Pentamera calcigera     | 225-1          |

**ATTACHMENT**

**Excel Data File**

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name              | Abundance |
|----------|------|-----------|-----|------------------------------|-----------|
| Upper    | 2009 | 105_09LTM | 1   | Capitella Capitata           | 15        |
| Upper    | 2009 | 105_09LTM | 2   | Capitella Capitata           | 9         |
| Upper    | 2009 | 105_09LTM | 1   | Capitella Jonesi             | 5         |
| Upper    | 2009 | 105_09LTM | 2   | Capitella Jonesi             | 1         |
| Upper    | 2009 | 105_09LTM | 1   | Eteone Heteropoda            | 7         |
| Upper    | 2009 | 105_09LTM | 2   | Eteone Heteropoda            | 8         |
| Upper    | 2009 | 105_09LTM | 1   | Nematoda                     | P         |
| Upper    | 2009 | 105_09LTM | 2   | Nematoda                     | P         |
| Upper    | 2009 | 105_09LTM | 1   | Oligochaeta                  | 3         |
| Upper    | 2009 | 105_09LTM | 2   | Oligochaeta                  | 2         |
| Upper    | 2009 | 105_09LTM | 2   | Phyllodoce Arenae            | 1         |
| Upper    | 2009 | 105_09LTM | 1   | Polycirrus Sp.               | 1         |
| Upper    | 2009 | 105_09LTM | 1   | Polydora Cornuta             | 8         |
| Upper    | 2009 | 105_09LTM | 2   | Polydora Cornuta             | 5         |
| Upper    | 2009 | 105_09LTM | 2   | Spurwinkia Salsa             | 1         |
| Upper    | 2009 | 105_09LTM | 1   | Streblospio Benedicti        | 538       |
| Upper    | 2009 | 105_09LTM | 2   | Streblospio Benedicti        | 638       |
| Upper    | 2009 | 105_09LTM | 1   | Tharyx Acutus                | 2         |
| Upper    | 2009 | 108_09LTM | 1   | Capitella Capitata           | 119       |
| Upper    | 2009 | 108_09LTM | 2   | Capitella Capitata           | 89        |
| Upper    | 2009 | 108_09LTM | 1   | Capitella Jonesi             | 5         |
| Upper    | 2009 | 108_09LTM | 2   | Capitella Jonesi             | 15        |
| Upper    | 2009 | 108_09LTM | 2   | Cirratulidae                 | 1         |
| Upper    | 2009 | 108_09LTM | 1   | Eteone Heteropoda            | 66        |
| Upper    | 2009 | 108_09LTM | 2   | Eteone Heteropoda            | 62        |
| Upper    | 2009 | 108_09LTM | 1   | Gemma Gemma                  | 1         |
| Upper    | 2009 | 108_09LTM | 1   | Gyptis Vittata               | 4         |
| Upper    | 2009 | 108_09LTM | 2   | Gyptis Vittata               | 1         |
| Upper    | 2009 | 108_09LTM | 1   | Leitoscoloplos Fragilis      | 2         |
| Upper    | 2009 | 108_09LTM | 2   | Leitoscoloplos Sp.           | 1         |
| Upper    | 2009 | 108_09LTM | 2   | Microphthalmus Aberrans      | 3         |
| Upper    | 2009 | 108_09LTM | 1   | Microphthalmus Sczelkowitzii | 4         |
| Upper    | 2009 | 108_09LTM | 1   | Microphthalmus Sp.           | 5         |
| Upper    | 2009 | 108_09LTM | 1   | Mulinia Lateralis            | 2         |
| Upper    | 2009 | 108_09LTM | 2   | Mulinia Lateralis            | 10        |
| Upper    | 2009 | 108_09LTM | 1   | Neanthes Succinea            | 2         |
| Upper    | 2009 | 108_09LTM | 2   | Neanthes Succinea            | 2         |
| Upper    | 2009 | 108_09LTM | 1   | Nematoda                     | P         |
| Upper    | 2009 | 108_09LTM | 2   | Nematoda                     | P         |
| Upper    | 2009 | 108_09LTM | 1   | Oligochaeta                  | 13        |
| Upper    | 2009 | 108_09LTM | 2   | Oligochaeta                  | 5         |
| Upper    | 2009 | 108_09LTM | 1   | Podarke Obscura              | 3         |
| Upper    | 2009 | 108_09LTM | 1   | Polydora Cornuta             | 18        |
| Upper    | 2009 | 108_09LTM | 2   | Polydora Cornuta             | 14        |
| Upper    | 2009 | 108_09LTM | 2   | Spiophanes Bombyx            | 1         |
| Upper    | 2009 | 108_09LTM | 1   | Streblospio Benedicti        | 3889      |
| Upper    | 2009 | 108_09LTM | 2   | Streblospio Benedicti        | 3343      |
| Upper    | 2009 | 108_09LTM | 1   | Tharyx Acutus                | 3         |
| Upper    | 2009 | 108_09LTM | 1   | Turbellaria                  | 1         |
| Upper    | 2009 | 109_09LTM | 2   | Cabira Incerta               | 1         |
| Upper    | 2009 | 109_09LTM | 2   | Callinectes Sapidus          | 1         |
| Upper    | 2009 | 109_09LTM | 2   | Capitella Capitata           | 3         |
| Upper    | 2009 | 109_09LTM | 1   | Eteone Heteropoda            | 13        |
| Upper    | 2009 | 109_09LTM | 2   | Eteone Heteropoda            | 14        |
| Upper    | 2009 | 109_09LTM | 1   | Gemma Gemma                  | 1         |
| Upper    | 2009 | 109_09LTM | 1   | Leitoscoloplos Sp.           | 2         |
| Upper    | 2009 | 109_09LTM | 1   | Mulinia Lateralis            | 5         |
| Upper    | 2009 | 109_09LTM | 2   | Mulinia Lateralis            | 4         |
| Upper    | 2009 | 109_09LTM | 1   | Nematoda                     | P         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Upper    | 2009 | 109_09LTM | 2   | Nematoda                       | P         |
| Upper    | 2009 | 109_09LTM | 1   | Oligochaeta                    | 45        |
| Upper    | 2009 | 109_09LTM | 2   | Oligochaeta                    | 37        |
| Upper    | 2009 | 109_09LTM | 1   | Polydora Cornuta               | 2         |
| Upper    | 2009 | 109_09LTM | 1   | Streblospio Benedicti          | 1520      |
| Upper    | 2009 | 109_09LTM | 2   | Streblospio Benedicti          | 1232      |
| Upper    | 2009 | 111_09LTM | 1   | Capitella Capitata             | 5         |
| Upper    | 2009 | 111_09LTM | 2   | Capitella Capitata             | 6         |
| Upper    | 2009 | 111_09LTM | 1   | Cirratulidae                   | 2         |
| Upper    | 2009 | 111_09LTM | 1   | Crepidula Plana                | 1         |
| Upper    | 2009 | 111_09LTM | 2   | Cylichna Oryza                 | 3         |
| Upper    | 2009 | 111_09LTM | 1   | Eteone Heteropoda              | 21        |
| Upper    | 2009 | 111_09LTM | 2   | Eteone Heteropoda              | 39        |
| Upper    | 2009 | 111_09LTM | 1   | Leitoscoloplos Fragilis        | 1         |
| Upper    | 2009 | 111_09LTM | 2   | Leitoscoloplos Fragilis        | 5         |
| Upper    | 2009 | 111_09LTM | 1   | Leitoscoloplos Sp.             | 5         |
| Upper    | 2009 | 111_09LTM | 2   | Leitoscoloplos Sp.             | 42        |
| Upper    | 2009 | 111_09LTM | 1   | Mediomastus Ambiseta           | 1         |
| Upper    | 2009 | 111_09LTM | 2   | Mulinia Lateralis              | 3         |
| Upper    | 2009 | 111_09LTM | 1   | Neanthes Succinea              | 1         |
| Upper    | 2009 | 111_09LTM | 1   | Nematoda                       | P         |
| Upper    | 2009 | 111_09LTM | 2   | Nematoda                       | P         |
| Upper    | 2009 | 111_09LTM | 1   | Neomysis Americana             | 1         |
| Upper    | 2009 | 111_09LTM | 1   | Oligochaeta                    | 163       |
| Upper    | 2009 | 111_09LTM | 2   | Oligochaeta                    | 171       |
| Upper    | 2009 | 111_09LTM | 1   | Polydora Cornuta               | 1         |
| Upper    | 2009 | 111_09LTM | 2   | Polydora Cornuta               | 4         |
| Upper    | 2009 | 111_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Upper    | 2009 | 111_09LTM | 2   | Rictaxis Punctostriatus        | 1         |
| Upper    | 2009 | 111_09LTM | 1   | Streblospio Benedicti          | 284       |
| Upper    | 2009 | 111_09LTM | 2   | Streblospio Benedicti          | 673       |
| Upper    | 2009 | 111_09LTM | 1   | Tharyx Acutus                  | 6         |
| Upper    | 2009 | 111_09LTM | 2   | Tharyx Acutus                  | 12        |
| Upper    | 2009 | 114_09LTM | 1   | Capitella Capitata             | 12        |
| Upper    | 2009 | 114_09LTM | 2   | Capitella Capitata             | 3         |
| Upper    | 2009 | 114_09LTM | 1   | Cirratulidae                   | 1         |
| Upper    | 2009 | 114_09LTM | 1   | Eteone Heteropoda              | 17        |
| Upper    | 2009 | 114_09LTM | 2   | Eteone Heteropoda              | 11        |
| Upper    | 2009 | 114_09LTM | 1   | Eumida Sanguinea               | 1         |
| Upper    | 2009 | 114_09LTM | 2   | Gyptis Vittata                 | 3         |
| Upper    | 2009 | 114_09LTM | 2   | Haminoea Solitaria             | 1         |
| Upper    | 2009 | 114_09LTM | 1   | Ilyanassa Obsoleta             | 1         |
| Upper    | 2009 | 114_09LTM | 2   | Ilyanassa Obsoleta             | 2         |
| Upper    | 2009 | 114_09LTM | 1   | Leitoscoloplos Fragilis        | 1         |
| Upper    | 2009 | 114_09LTM | 2   | Leitoscoloplos Fragilis        | 2         |
| Upper    | 2009 | 114_09LTM | 1   | Leitoscoloplos Sp.             | 32        |
| Upper    | 2009 | 114_09LTM | 2   | Leitoscoloplos Sp.             | 20        |
| Upper    | 2009 | 114_09LTM | 2   | Mediomastus Ambiseta           | 1         |
| Upper    | 2009 | 114_09LTM | 1   | Mulinia Lateralis              | 18        |
| Upper    | 2009 | 114_09LTM | 1   | Nematoda                       | P         |
| Upper    | 2009 | 114_09LTM | 2   | Nematoda                       | P         |
| Upper    | 2009 | 114_09LTM | 1   | Neomysis Americana             | 1         |
| Upper    | 2009 | 114_09LTM | 1   | Oligochaeta                    | 240       |
| Upper    | 2009 | 114_09LTM | 2   | Oligochaeta                    | 233       |
| Upper    | 2009 | 114_09LTM | 1   | Pectinaria Gouldi              | 2         |
| Upper    | 2009 | 114_09LTM | 1   | Polydora Cornuta               | 7         |
| Upper    | 2009 | 114_09LTM | 2   | Polydora Cornuta               | 2         |
| Upper    | 2009 | 114_09LTM | 1   | Rictaxis Punctostriatus        | 3         |
| Upper    | 2009 | 114_09LTM | 1   | Spurwinkia Salsa               | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name          | Abundance |
|----------|------|-----------|-----|--------------------------|-----------|
| Upper    | 2009 | 114_09LTM | 1   | Streblospio Benedicti    | 949       |
| Upper    | 2009 | 114_09LTM | 2   | Streblospio Benedicti    | 747       |
| Upper    | 2009 | 114_09LTM | 1   | Tharyx Acutus            | 10        |
| Upper    | 2009 | 114_09LTM | 2   | Tharyx Acutus            | 15        |
| Upper    | 2009 | 115_09LTM | 1   | Capitella Capitata       | 4         |
| Upper    | 2009 | 115_09LTM | 2   | Capitella Capitata       | 7         |
| Upper    | 2009 | 115_09LTM | 1   | Edotia Sp.               | 1         |
| Upper    | 2009 | 115_09LTM | 1   | Eteone Heteropoda        | 5         |
| Upper    | 2009 | 115_09LTM | 2   | Eteone Heteropoda        | 3         |
| Upper    | 2009 | 115_09LTM | 1   | Gammarus Mucronatus      | 4         |
| Upper    | 2009 | 115_09LTM | 2   | Gammarus Mucronatus      | 7         |
| Upper    | 2009 | 115_09LTM | 2   | Leitoscoloplos Sp.       | 1         |
| Upper    | 2009 | 115_09LTM | 2   | Mulinia Lateralis        | 1         |
| Upper    | 2009 | 115_09LTM | 1   | Nematoda                 | P         |
| Upper    | 2009 | 115_09LTM | 2   | Nematoda                 | P         |
| Upper    | 2009 | 115_09LTM | 1   | Oligochaeta              | 14        |
| Upper    | 2009 | 115_09LTM | 2   | Oligochaeta              | 12        |
| Upper    | 2009 | 115_09LTM | 1   | Polydora Cornuta         | 1         |
| Upper    | 2009 | 115_09LTM | 2   | Polydora Cornuta         | 6         |
| Upper    | 2009 | 115_09LTM | 2   | Prionospio Steenstrupi   | 284       |
| Upper    | 2009 | 115_09LTM | 1   | Streblospio Benedicti    | 359       |
| Upper    | 2009 | 117_09LTM | 1   | Balanus Venustus         | 1         |
| Upper    | 2009 | 117_09LTM | 1   | Bowerbankia Gracilis     | P         |
| Upper    | 2009 | 117_09LTM | 1   | Bowerbankia Imbricata    | P         |
| Upper    | 2009 | 117_09LTM | 1   | Capitella Capitata       | 9         |
| Upper    | 2009 | 117_09LTM | 2   | Capitella Capitata       | 9         |
| Upper    | 2009 | 117_09LTM | 1   | Capitella Jonesi         | 1         |
| Upper    | 2009 | 117_09LTM | 1   | Cirratulidae             | 56        |
| Upper    | 2009 | 117_09LTM | 2   | Cirratulidae             | 347       |
| Upper    | 2009 | 117_09LTM | 1   | Crepidula Fornicata      | 1         |
| Upper    | 2009 | 117_09LTM | 2   | Edotia Sp.               | 2         |
| Upper    | 2009 | 117_09LTM | 1   | Eteone Heteropoda        | 20        |
| Upper    | 2009 | 117_09LTM | 2   | Eteone Heteropoda        | 35        |
| Upper    | 2009 | 117_09LTM | 1   | Leitoscoloplos Sp.       | 2         |
| Upper    | 2009 | 117_09LTM | 2   | Leitoscoloplos Sp.       | 10        |
| Upper    | 2009 | 117_09LTM | 2   | Mediomastus Ambiseta     | 5         |
| Upper    | 2009 | 117_09LTM | 1   | Mulinia Lateralis        | 6         |
| Upper    | 2009 | 117_09LTM | 1   | Neanthes Arenaceodentata | 2         |
| Upper    | 2009 | 117_09LTM | 2   | Neanthes Succinea        | 1         |
| Upper    | 2009 | 117_09LTM | 1   | Nematoda                 | P         |
| Upper    | 2009 | 117_09LTM | 1   | Oligochaeta              | 140       |
| Upper    | 2009 | 117_09LTM | 2   | Oligochaeta              | 196       |
| Upper    | 2009 | 117_09LTM | 1   | Podarke Obscura          | 1         |
| Upper    | 2009 | 117_09LTM | 1   | Polydora Cornuta         | 40        |
| Upper    | 2009 | 117_09LTM | 2   | Polydora Cornuta         | 6         |
| Upper    | 2009 | 117_09LTM | 1   | Streblospio Benedicti    | 1914      |
| Upper    | 2009 | 117_09LTM | 2   | Streblospio Benedicti    | 2776      |
| Upper    | 2009 | 117_09LTM | 1   | Tharyx Acutus            | 293       |
| Upper    | 2009 | 117_09LTM | 2   | Tharyx Acutus            | 1187      |
| Upper    | 2009 | 120_09LTM | 1   | Anthozoa                 | 2         |
| Upper    | 2009 | 120_09LTM | 1   | Capitella Capitata       | 810       |
| Upper    | 2009 | 120_09LTM | 2   | Capitella Capitata       | 287       |
| Upper    | 2009 | 120_09LTM | 1   | Capitella Jonesi         | 71        |
| Upper    | 2009 | 120_09LTM | 2   | Capitella Jonesi         | 36        |
| Upper    | 2009 | 120_09LTM | 1   | Eteone Heteropoda        | 12        |
| Upper    | 2009 | 120_09LTM | 2   | Eteone Heteropoda        | 5         |
| Upper    | 2009 | 120_09LTM | 1   | Gastropoda               | 1         |
| Upper    | 2009 | 120_09LTM | 1   | Ilyanassa Obsoleta       | 18        |
| Upper    | 2009 | 120_09LTM | 2   | Ilyanassa Obsoleta       | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Upper    | 2009 | 120_09LTM | 1   | Leitoscoloplos Sp.            | 1         |
| Upper    | 2009 | 120_09LTM | 2   | Leitoscoloplos Sp.            | 1         |
| Upper    | 2009 | 120_09LTM | 1   | Mediomastus Ambiseta          | 2         |
| Upper    | 2009 | 120_09LTM | 2   | Microphthalmus Sczelkowi      | 1         |
| Upper    | 2009 | 120_09LTM | 1   | Microphthalmus Sp.            | 2         |
| Upper    | 2009 | 120_09LTM | 1   | Nematoda                      | P         |
| Upper    | 2009 | 120_09LTM | 1   | Oligochaeta                   | 63        |
| Upper    | 2009 | 120_09LTM | 2   | Oligochaeta                   | 5         |
| Upper    | 2009 | 120_09LTM | 2   | Podarke Obscura               | 1         |
| Upper    | 2009 | 120_09LTM | 1   | Polydora Cornuta              | 5         |
| Upper    | 2009 | 120_09LTM | 1   | Streblospio Benedicti         | 131       |
| Upper    | 2009 | 120_09LTM | 2   | Streblospio Benedicti         | 6         |
| Upper    | 2009 | 120_09LTM | 1   | Tharyx Acutus                 | 38        |
| Upper    | 2009 | 120_09LTM | 2   | Tharyx Acutus                 | 1         |
| Upper    | 2009 | 121_09LTM | 2   | Anadara Transversa            | 1         |
| Upper    | 2009 | 121_09LTM | 2   | Callinectes Sapidus           | 1         |
| Upper    | 2009 | 121_09LTM | 1   | Capitella Capitata            | 3         |
| Upper    | 2009 | 121_09LTM | 2   | Capitella Capitata            | 2         |
| Upper    | 2009 | 121_09LTM | 1   | Capitella Jonesi              | 1         |
| Upper    | 2009 | 121_09LTM | 1   | Eteone Heteropoda             | 10        |
| Upper    | 2009 | 121_09LTM | 2   | Eteone Heteropoda             | 10        |
| Upper    | 2009 | 121_09LTM | 2   | Ilyanassa Obsoleta            | 2         |
| Upper    | 2009 | 121_09LTM | 2   | Leitoscoloplos Fragilis       | 1         |
| Upper    | 2009 | 121_09LTM | 1   | Leitoscoloplos Sp.            | 46        |
| Upper    | 2009 | 121_09LTM | 2   | Leitoscoloplos Sp.            | 79        |
| Upper    | 2009 | 121_09LTM | 2   | Mediomastus Ambiseta          | 6         |
| Upper    | 2009 | 121_09LTM | 1   | Mercenaria Mercenaria         | 1         |
| Upper    | 2009 | 121_09LTM | 2   | Microphthalmus Sczelkowi      | 1         |
| Upper    | 2009 | 121_09LTM | 2   | Monticellina Dorsobranchialis | 1         |
| Upper    | 2009 | 121_09LTM | 1   | Nematoda                      | P         |
| Upper    | 2009 | 121_09LTM | 2   | Nematoda                      | P         |
| Upper    | 2009 | 121_09LTM | 2   | Nucula Proxima                | 1         |
| Upper    | 2009 | 121_09LTM | 1   | Oligochaeta                   | 32        |
| Upper    | 2009 | 121_09LTM | 2   | Oligochaeta                   | 380       |
| Upper    | 2009 | 121_09LTM | 1   | Streblospio Benedicti         | 498       |
| Upper    | 2009 | 121_09LTM | 2   | Streblospio Benedicti         | 957       |
| Upper    | 2009 | 121_09LTM | 1   | Tharyx Acutus                 | 3         |
| Upper    | 2009 | 121_09LTM | 2   | Tharyx Acutus                 | 4         |
| Upper    | 2009 | 123_09LTM | 1   | Capitella Capitata            | 10        |
| Upper    | 2009 | 123_09LTM | 2   | Capitella Capitata            | 3         |
| Upper    | 2009 | 123_09LTM | 1   | Cirratulidae                  | 1         |
| Upper    | 2009 | 123_09LTM | 1   | Eteone Heteropoda             | 6         |
| Upper    | 2009 | 123_09LTM | 2   | Eteone Heteropoda             | 8         |
| Upper    | 2009 | 123_09LTM | 1   | Ilyanassa Obsoleta            | 7         |
| Upper    | 2009 | 123_09LTM | 2   | Ilyanassa Obsoleta            | 2         |
| Upper    | 2009 | 123_09LTM | 1   | Leitoscoloplos Fragilis       | 1         |
| Upper    | 2009 | 123_09LTM | 2   | Leitoscoloplos Fragilis       | 2         |
| Upper    | 2009 | 123_09LTM | 1   | Leitoscoloplos Sp.            | 8         |
| Upper    | 2009 | 123_09LTM | 2   | Leitoscoloplos Sp.            | 7         |
| Upper    | 2009 | 123_09LTM | 2   | Microciona Prolifera          | 1         |
| Upper    | 2009 | 123_09LTM | 1   | Mulinia Lateralis             | 6         |
| Upper    | 2009 | 123_09LTM | 2   | Mulinia Lateralis             | 34        |
| Upper    | 2009 | 123_09LTM | 1   | Nematoda                      | P         |
| Upper    | 2009 | 123_09LTM | 2   | Nematoda                      | P         |
| Upper    | 2009 | 123_09LTM | 1   | Oligochaeta                   | 83        |
| Upper    | 2009 | 123_09LTM | 2   | Oligochaeta                   | 35        |
| Upper    | 2009 | 123_09LTM | 1   | Pectinaria Gouldi             | 1         |
| Upper    | 2009 | 123_09LTM | 2   | Pectinaria Gouldi             | 1         |
| Upper    | 2009 | 123_09LTM | 1   | Podarke Obscura               | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Upper    | 2009 | 123_09LTM | 1   | Polydora Cornuta              | 3         |
| Upper    | 2009 | 123_09LTM | 2   | Polydora Cornuta              | 3         |
| Upper    | 2009 | 123_09LTM | 2   | Rictaxis Punctostriatus       | 3         |
| Upper    | 2009 | 123_09LTM | 1   | Streblospio Benedicti         | 717       |
| Upper    | 2009 | 123_09LTM | 2   | Streblospio Benedicti         | 434       |
| Upper    | 2009 | 123_09LTM | 1   | Tharyx Acutus                 | 28        |
| Upper    | 2009 | 123_09LTM | 2   | Tharyx Acutus                 | 11        |
| Upper    | 2009 | 125_09LTM | 1   | Bowerbankia Gracilis          | P         |
| Upper    | 2009 | 125_09LTM | 1   | Capitella Capitata            | 1         |
| Upper    | 2009 | 125_09LTM | 2   | Capitella Capitata            | 6         |
| Upper    | 2009 | 125_09LTM | 2   | Capitella Jonesi              | 2         |
| Upper    | 2009 | 125_09LTM | 1   | Cirratulidae                  | 10        |
| Upper    | 2009 | 125_09LTM | 1   | Conopeum Truitti              | P         |
| Upper    | 2009 | 125_09LTM | 1   | Eteone Heteropoda             | 1         |
| Upper    | 2009 | 125_09LTM | 2   | Eteone Heteropoda             | 4         |
| Upper    | 2009 | 125_09LTM | 1   | Leitoscoloplos Sp.            | 4         |
| Upper    | 2009 | 125_09LTM | 1   | Mediomastus Ambiseta          | 1         |
| Upper    | 2009 | 125_09LTM | 1   | Microphthalmus Sp.            | 1         |
| Upper    | 2009 | 125_09LTM | 1   | Monticellina Dorsobranchialis | 1         |
| Upper    | 2009 | 125_09LTM | 1   | Nematoda                      | P         |
| Upper    | 2009 | 125_09LTM | 2   | Nematoda                      | P         |
| Upper    | 2009 | 125_09LTM | 2   | Neomysis Americana            | 1         |
| Upper    | 2009 | 125_09LTM | 1   | Nudibranchia                  | 1         |
| Upper    | 2009 | 125_09LTM | 1   | Obelia Bidentata              | P         |
| Upper    | 2009 | 125_09LTM | 1   | Oligochaeta                   | 47        |
| Upper    | 2009 | 125_09LTM | 2   | Oligochaeta                   | 34        |
| Upper    | 2009 | 125_09LTM | 1   | Streblospio Benedicti         | 154       |
| Upper    | 2009 | 125_09LTM | 2   | Streblospio Benedicti         | 112       |
| Upper    | 2009 | 125_09LTM | 1   | Tharyx Acutus                 | 11        |
| Upper    | 2009 | 125_09LTM | 2   | Tharyx Acutus                 | 4         |
| Upper    | 2009 | 126_09LTM | 1   | Capitella Capitata            | 1         |
| Upper    | 2009 | 126_09LTM | 2   | Capitella Capitata            | 10        |
| Upper    | 2009 | 126_09LTM | 1   | Capitella Jonesi              | 1         |
| Upper    | 2009 | 126_09LTM | 1   | Edotia Sp.                    | 1         |
| Upper    | 2009 | 126_09LTM | 2   | Edotia Sp.                    | 1         |
| Upper    | 2009 | 126_09LTM | 1   | Eteone Heteropoda             | 4         |
| Upper    | 2009 | 126_09LTM | 2   | Eteone Heteropoda             | 3         |
| Upper    | 2009 | 126_09LTM | 1   | Hediste Diversicolor          | 9         |
| Upper    | 2009 | 126_09LTM | 2   | Hediste Diversicolor          | 11        |
| Upper    | 2009 | 126_09LTM | 2   | Ilyanassa Obsoleta            | 2         |
| Upper    | 2009 | 126_09LTM | 1   | Leitoscoloplos Sp.            | 1         |
| Upper    | 2009 | 126_09LTM | 1   | Marenzelleria Viridis         | 1         |
| Upper    | 2009 | 126_09LTM | 1   | Oligochaeta                   | 29        |
| Upper    | 2009 | 126_09LTM | 2   | Oligochaeta                   | 6         |
| Upper    | 2009 | 126_09LTM | 1   | Polydora Cornuta              | 2         |
| Upper    | 2009 | 126_09LTM | 2   | Polydora Cornuta              | 3         |
| Upper    | 2009 | 126_09LTM | 1   | Pygospio Elegans              | 1         |
| Upper    | 2009 | 126_09LTM | 1   | Spio Setosa                   | 3         |
| Upper    | 2009 | 126_09LTM | 2   | Spio Setosa                   | 5         |
| Upper    | 2009 | 126_09LTM | 1   | Streblospio Benedicti         | 279       |
| Upper    | 2009 | 126_09LTM | 2   | Streblospio Benedicti         | 283       |
| Upper    | 2009 | 128_09LTM | 1   | Capitella Capitata            | 1         |
| Upper    | 2009 | 128_09LTM | 2   | Capitella Capitata            | 2         |
| Upper    | 2009 | 128_09LTM | 2   | Capitella Jonesi              | 1         |
| Upper    | 2009 | 128_09LTM | 1   | Eteone Heteropoda             | 3         |
| Upper    | 2009 | 128_09LTM | 1   | Gemma Gemma                   | 1         |
| Upper    | 2009 | 128_09LTM | 2   | Gemma Gemma                   | 1         |
| Upper    | 2009 | 128_09LTM | 2   | Leitoscoloplos Fragilis       | 1         |
| Upper    | 2009 | 128_09LTM | 1   | Leitoscoloplos Sp.            | 31        |

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| Location | Year | Station   | Rep | Scientific_Name         | Abundance |
|----------|------|-----------|-----|-------------------------|-----------|
| Upper    | 2009 | 128_09LTM | 2   | Leitoscoloplos Sp.      | 8         |
| Upper    | 2009 | 128_09LTM | 1   | Mediomastus Ambiseta    | 4         |
| Upper    | 2009 | 128_09LTM | 2   | Mediomastus Ambiseta    | 2         |
| Upper    | 2009 | 128_09LTM | 1   | Mulinia Lateralis       | 239       |
| Upper    | 2009 | 128_09LTM | 2   | Mulinia Lateralis       | 245       |
| Upper    | 2009 | 128_09LTM | 2   | Neanthes Succinea       | 1         |
| Upper    | 2009 | 128_09LTM | 1   | Nematoda                | P         |
| Upper    | 2009 | 128_09LTM | 2   | Nematoda                | P         |
| Upper    | 2009 | 128_09LTM | 1   | Neomysis Americana      | 7         |
| Upper    | 2009 | 128_09LTM | 2   | Neomysis Americana      | 2         |
| Upper    | 2009 | 128_09LTM | 1   | Oligochaeta             | 106       |
| Upper    | 2009 | 128_09LTM | 2   | Oligochaeta             | 135       |
| Upper    | 2009 | 128_09LTM | 1   | Pectinaria Gouldi       | 3         |
| Upper    | 2009 | 128_09LTM | 2   | Pectinaria Gouldi       | 7         |
| Upper    | 2009 | 128_09LTM | 2   | Podarke Obscura         | 1         |
| Upper    | 2009 | 128_09LTM | 1   | Polydora Cornuta        | 5         |
| Upper    | 2009 | 128_09LTM | 2   | Polydora Cornuta        | 6         |
| Upper    | 2009 | 128_09LTM | 1   | Rictaxis Punctostriatus | 20        |
| Upper    | 2009 | 128_09LTM | 2   | Rictaxis Punctostriatus | 20        |
| Upper    | 2009 | 128_09LTM | 1   | Streblospio Benedicti   | 415       |
| Upper    | 2009 | 128_09LTM | 2   | Streblospio Benedicti   | 408       |
| Upper    | 2009 | 128_09LTM | 1   | Tharyx Acutus           | 5         |
| Upper    | 2009 | 128_09LTM | 2   | Tharyx Acutus           | 9         |
| Upper    | 2009 | 130_09LTM | 1   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 130_09LTM | 2   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 130_09LTM | 1   | Capitella Capitata      | 4         |
| Upper    | 2009 | 130_09LTM | 2   | Capitella Capitata      | 7         |
| Upper    | 2009 | 130_09LTM | 1   | Leitoscoloplos Sp.      | 1         |
| Upper    | 2009 | 130_09LTM | 2   | Leitoscoloplos Sp.      | 1         |
| Upper    | 2009 | 130_09LTM | 1   | Oligochaeta             | 2         |
| Upper    | 2009 | 130_09LTM | 2   | Oligochaeta             | 5         |
| Upper    | 2009 | 130_09LTM | 1   | Streblospio Benedicti   | 11        |
| Upper    | 2009 | 130_09LTM | 2   | Streblospio Benedicti   | 17        |
| Upper    | 2009 | 131_09LTM | 1   | Capitella Capitata      | 1         |
| Upper    | 2009 | 131_09LTM | 1   | Crangon Septemspinosa   | 2         |
| Upper    | 2009 | 131_09LTM | 2   | Gemma Gemma             | 1         |
| Upper    | 2009 | 131_09LTM | 1   | Heteromastus Filiformis | 1         |
| Upper    | 2009 | 131_09LTM | 1   | Ilyanassa Obsoleta      | 10        |
| Upper    | 2009 | 131_09LTM | 2   | Ilyanassa Obsoleta      | 39        |
| Upper    | 2009 | 131_09LTM | 1   | Leitoscoloplos Fragilis | 1         |
| Upper    | 2009 | 131_09LTM | 1   | Leitoscoloplos Sp.      | 1         |
| Upper    | 2009 | 131_09LTM | 2   | Leitoscoloplos Sp.      | 3         |
| Upper    | 2009 | 131_09LTM | 1   | Mulinia Lateralis       | 5         |
| Upper    | 2009 | 131_09LTM | 2   | Mulinia Lateralis       | 5         |
| Upper    | 2009 | 131_09LTM | 1   | Nematoda                | P         |
| Upper    | 2009 | 131_09LTM | 2   | Nematoda                | P         |
| Upper    | 2009 | 131_09LTM | 1   | Oligochaeta             | 65        |
| Upper    | 2009 | 131_09LTM | 2   | Oligochaeta             | 66        |
| Upper    | 2009 | 131_09LTM | 2   | Polydora Cornuta        | 1         |
| Upper    | 2009 | 131_09LTM | 1   | Spio Setosa             | 1         |
| Upper    | 2009 | 131_09LTM | 1   | Streblospio Benedicti   | 76        |
| Upper    | 2009 | 131_09LTM | 2   | Streblospio Benedicti   | 88        |
| Upper    | 2009 | 131_09LTM | 1   | Tharyx Acutus           | 5         |
| Upper    | 2009 | 131_09LTM | 2   | Tharyx Acutus           | 1         |
| Upper    | 2009 | 134_09LTM | 2   | Aeverrillia Armata      | P         |
| Upper    | 2009 | 134_09LTM | 1   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 134_09LTM | 2   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 134_09LTM | 1   | Capitella Capitata      | 2         |
| Upper    | 2009 | 134_09LTM | 2   | Cirratulidae            | 9         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name            | Abundance |
|----------|------|-----------|-----|----------------------------|-----------|
| Upper    | 2009 | 134_09LTM | 1   | Crangon Septemspinosa      | 2         |
| Upper    | 2009 | 134_09LTM | 2   | Edotia Sp.                 | 1         |
| Upper    | 2009 | 134_09LTM | 1   | Eteone Heteropoda          | 1         |
| Upper    | 2009 | 134_09LTM | 2   | Eteone Heteropoda          | 5         |
| Upper    | 2009 | 134_09LTM | 1   | Ilyanassa Obsoleta         | 1         |
| Upper    | 2009 | 134_09LTM | 2   | Ilyanassa Obsoleta         | 3         |
| Upper    | 2009 | 134_09LTM | 2   | Leitoscoloplos Fragilis    | 1         |
| Upper    | 2009 | 134_09LTM | 1   | Leitoscoloplos Sp.         | 3         |
| Upper    | 2009 | 134_09LTM | 2   | Leitoscoloplos Sp.         | 7         |
| Upper    | 2009 | 134_09LTM | 2   | Molgula Manhattensis       | 6         |
| Upper    | 2009 | 134_09LTM | 1   | Mulinia Lateralis          | 102       |
| Upper    | 2009 | 134_09LTM | 2   | Mulinia Lateralis          | 214       |
| Upper    | 2009 | 134_09LTM | 2   | Neanthes Succinea          | 4         |
| Upper    | 2009 | 134_09LTM | 2   | Nematoda                   | P         |
| Upper    | 2009 | 134_09LTM | 1   | Neomysis Americana         | 6         |
| Upper    | 2009 | 134_09LTM | 1   | Obelia Bidentata           | P         |
| Upper    | 2009 | 134_09LTM | 2   | Obelia Bidentata           | P         |
| Upper    | 2009 | 134_09LTM | 1   | Oligochaeta                | 108       |
| Upper    | 2009 | 134_09LTM | 2   | Oligochaeta                | 81        |
| Upper    | 2009 | 134_09LTM | 1   | Pectinaria Gouldi          | 1         |
| Upper    | 2009 | 134_09LTM | 2   | Pectinaria Gouldi          | 4         |
| Upper    | 2009 | 134_09LTM | 2   | Podarke Obscura            | 1         |
| Upper    | 2009 | 134_09LTM | 1   | Polydora Cornuta           | 10        |
| Upper    | 2009 | 134_09LTM | 2   | Polydora Cornuta           | 183       |
| Upper    | 2009 | 134_09LTM | 2   | Rictaxis Punctostriatus    | 4         |
| Upper    | 2009 | 134_09LTM | 1   | Streblospio Benedicti      | 306       |
| Upper    | 2009 | 134_09LTM | 2   | Streblospio Benedicti      | 487       |
| Upper    | 2009 | 134_09LTM | 2   | Tellina Agilis             | 1         |
| Upper    | 2009 | 134_09LTM | 1   | Tharyx Acutus              | 7         |
| Upper    | 2009 | 134_09LTM | 2   | Tharyx Acutus              | 7         |
| Upper    | 2009 | 134_09LTM | 2   | Turbellaria                | 1         |
| Upper    | 2009 | 135_09LTM | 1   | Actiniaria                 | 1         |
| Upper    | 2009 | 135_09LTM | 1   | Capitella Capitata         | 1         |
| Upper    | 2009 | 135_09LTM | 2   | Capitella Capitata         | 2         |
| Upper    | 2009 | 135_09LTM | 1   | Cirratulidae               | 1         |
| Upper    | 2009 | 135_09LTM | 1   | Gammarus Mucronatus        | 1         |
| Upper    | 2009 | 135_09LTM | 1   | Heteromastus Filiformis    | 2         |
| Upper    | 2009 | 135_09LTM | 2   | Heteromastus Filiformis    | 2         |
| Upper    | 2009 | 135_09LTM | 1   | Ilyanassa Obsoleta         | 10        |
| Upper    | 2009 | 135_09LTM | 2   | Ilyanassa Obsoleta         | 9         |
| Upper    | 2009 | 135_09LTM | 1   | Leitoscoloplos Sp.         | 6         |
| Upper    | 2009 | 135_09LTM | 1   | Microphthalmus Sczelkowiei | 2         |
| Upper    | 2009 | 135_09LTM | 1   | Mulinia Lateralis          | 1         |
| Upper    | 2009 | 135_09LTM | 1   | Nematoda                   | P         |
| Upper    | 2009 | 135_09LTM | 2   | Nematoda                   | P         |
| Upper    | 2009 | 135_09LTM | 1   | Oligochaeta                | 104       |
| Upper    | 2009 | 135_09LTM | 2   | Oligochaeta                | 70        |
| Upper    | 2009 | 135_09LTM | 1   | Polydora Cornuta           | 2         |
| Upper    | 2009 | 135_09LTM | 2   | Polydora Cornuta           | 1         |
| Upper    | 2009 | 135_09LTM | 1   | Sphaerosyllis Longicauda   | 1         |
| Upper    | 2009 | 135_09LTM | 1   | Streblospio Benedicti      | 15        |
| Upper    | 2009 | 135_09LTM | 2   | Streblospio Benedicti      | 2         |
| Upper    | 2009 | 138_09LTM | 2   | Actiniaria                 | 1         |
| Upper    | 2009 | 138_09LTM | 2   | Capitella Capitata         | 3         |
| Upper    | 2009 | 138_09LTM | 1   | Capitella Jonesi           | 5         |
| Upper    | 2009 | 138_09LTM | 2   | Capitella Jonesi           | 59        |
| Upper    | 2009 | 138_09LTM | 2   | Cirratulidae               | 2         |
| Upper    | 2009 | 138_09LTM | 1   | Ilyanassa Obsoleta         | 31        |
| Upper    | 2009 | 138_09LTM | 2   | Ilyanassa Obsoleta         | 60        |

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| Location | Year | Station   | Rep | Scientific_Name         | Abundance |
|----------|------|-----------|-----|-------------------------|-----------|
| Upper    | 2009 | 138_09LTM | 2   | Leitoscoloplos Sp.      | 1         |
| Upper    | 2009 | 138_09LTM | 1   | Microphthalmus Sp.      | 1         |
| Upper    | 2009 | 138_09LTM | 1   | Mulinia Lateralis       | 1         |
| Upper    | 2009 | 138_09LTM | 2   | Mulinia Lateralis       | 1         |
| Upper    | 2009 | 138_09LTM | 1   | Nematoda                | P         |
| Upper    | 2009 | 138_09LTM | 2   | Nematoda                | P         |
| Upper    | 2009 | 138_09LTM | 1   | Nudibranchia            | 1         |
| Upper    | 2009 | 138_09LTM | 1   | Oligochaeta             | 18        |
| Upper    | 2009 | 138_09LTM | 2   | Oligochaeta             | 11        |
| Upper    | 2009 | 138_09LTM | 2   | Pectinaria Gouldi       | 1         |
| Upper    | 2009 | 138_09LTM | 2   | Podarke Obscura         | 1         |
| Upper    | 2009 | 138_09LTM | 1   | Polydora Cornuta        | 2         |
| Upper    | 2009 | 138_09LTM | 2   | Polydora Cornuta        | 28        |
| Upper    | 2009 | 138_09LTM | 1   | Streblospio Benedicti   | 269       |
| Upper    | 2009 | 138_09LTM | 2   | Streblospio Benedicti   | 63        |
| Upper    | 2009 | 138_09LTM | 2   | Tharyx Acutus           | 1         |
| Upper    | 2009 | 139_09LTM | 2   | Capitella Capitata      | 1         |
| Upper    | 2009 | 139_09LTM | 1   | Ilyanassa Obsoleta      | 2         |
| Upper    | 2009 | 139_09LTM | 2   | Ilyanassa Obsoleta      | 2         |
| Upper    | 2009 | 139_09LTM | 1   | Leitoscoloplos Sp.      | 3         |
| Upper    | 2009 | 139_09LTM | 2   | Leitoscoloplos Sp.      | 6         |
| Upper    | 2009 | 139_09LTM | 2   | Mercenaria Mercenaria   | 2         |
| Upper    | 2009 | 139_09LTM | 2   | Mulinia Lateralis       | 2         |
| Upper    | 2009 | 139_09LTM | 1   | Nematoda                | P         |
| Upper    | 2009 | 139_09LTM | 2   | Nematoda                | P         |
| Upper    | 2009 | 139_09LTM | 2   | Neomysis Americana      | 1         |
| Upper    | 2009 | 139_09LTM | 1   | Oligochaeta             | 127       |
| Upper    | 2009 | 139_09LTM | 2   | Oligochaeta             | 75        |
| Upper    | 2009 | 139_09LTM | 1   | Pectinaria Gouldi       | 1         |
| Upper    | 2009 | 139_09LTM | 1   | Streblospio Benedicti   | 154       |
| Upper    | 2009 | 139_09LTM | 2   | Streblospio Benedicti   | 114       |
| Upper    | 2009 | 139_09LTM | 1   | Tharyx Acutus           | 2         |
| Upper    | 2009 | 140_09LTM | 1   | Capitella Capitata      | 1         |
| Upper    | 2009 | 140_09LTM | 2   | Capitella Capitata      | 1         |
| Upper    | 2009 | 140_09LTM | 1   | Cirratulidae            | 1         |
| Upper    | 2009 | 140_09LTM | 2   | Cirratulidae            | 7         |
| Upper    | 2009 | 140_09LTM | 2   | Gyptis Vittata          | 1         |
| Upper    | 2009 | 140_09LTM | 1   | Ilyanassa Obsoleta      | 3         |
| Upper    | 2009 | 140_09LTM | 2   | Ilyanassa Obsoleta      | 3         |
| Upper    | 2009 | 140_09LTM | 1   | Leitoscoloplos Fragilis | 4         |
| Upper    | 2009 | 140_09LTM | 1   | Leitoscoloplos Sp.      | 13        |
| Upper    | 2009 | 140_09LTM | 2   | Leitoscoloplos Sp.      | 27        |
| Upper    | 2009 | 140_09LTM | 1   | Mulinia Lateralis       | 35        |
| Upper    | 2009 | 140_09LTM | 2   | Mulinia Lateralis       | 71        |
| Upper    | 2009 | 140_09LTM | 2   | Neanthes Succinea       | 1         |
| Upper    | 2009 | 140_09LTM | 1   | Nematoda                | P         |
| Upper    | 2009 | 140_09LTM | 2   | Nematoda                | P         |
| Upper    | 2009 | 140_09LTM | 2   | Neomysis Americana      | 2         |
| Upper    | 2009 | 140_09LTM | 1   | Oligochaeta             | 29        |
| Upper    | 2009 | 140_09LTM | 2   | Oligochaeta             | 56        |
| Upper    | 2009 | 140_09LTM | 1   | Pectinaria Gouldi       | 1         |
| Upper    | 2009 | 140_09LTM | 2   | Pectinaria Gouldi       | 7         |
| Upper    | 2009 | 140_09LTM | 1   | Polydora Cornuta        | 7         |
| Upper    | 2009 | 140_09LTM | 2   | Polydora Cornuta        | 12        |
| Upper    | 2009 | 140_09LTM | 1   | Rictaxis Punctostriatus | 4         |
| Upper    | 2009 | 140_09LTM | 2   | Rictaxis Punctostriatus | 5         |
| Upper    | 2009 | 140_09LTM | 1   | Spio Setosa             | 1         |
| Upper    | 2009 | 140_09LTM | 1   | Streblospio Benedicti   | 141       |
| Upper    | 2009 | 140_09LTM | 2   | Streblospio Benedicti   | 183       |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Upper    | 2009 | 140_09LTM | 1   | Tharyx Acutus                  | 5         |
| Upper    | 2009 | 140_09LTM | 2   | Tharyx Acutus                  | 11        |
| Upper    | 2009 | 146_09LTM | 2   | Aeverrillia Armata             | P         |
| Upper    | 2009 | 146_09LTM | 1   | Anadara Transversa             | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Anadara Transversa             | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Anomia Simplex                 | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Apocorophium Acutum            | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Bowerbankia Gracilis           | P         |
| Upper    | 2009 | 146_09LTM | 1   | Capitella Capitata             | 2         |
| Upper    | 2009 | 146_09LTM | 1   | Cirratulidae                   | 7         |
| Upper    | 2009 | 146_09LTM | 2   | Cirratulidae                   | 9         |
| Upper    | 2009 | 146_09LTM | 2   | Cliona Celata                  | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Cliona Vastifica               | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Clytia Hemisphaerica           | P         |
| Upper    | 2009 | 146_09LTM | 1   | Crepidula Fornicata            | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Dipolydora Socialis            | 2         |
| Upper    | 2009 | 146_09LTM | 2   | Dyspanopeus Sayi               | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Edotia Sp.                     | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Eteone Heteropoda              | 12        |
| Upper    | 2009 | 146_09LTM | 2   | Eteone Heteropoda              | 4         |
| Upper    | 2009 | 146_09LTM | 1   | Eumida Sanguinea               | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Eunicidae                      | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Glycera Americana              | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Gyptis Vittata                 | 2         |
| Upper    | 2009 | 146_09LTM | 2   | Gyptis Vittata                 | 2         |
| Upper    | 2009 | 146_09LTM | 2   | Halecium Sp.                   | P         |
| Upper    | 2009 | 146_09LTM | 2   | Hemicyclops Sp.                | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Hydroides Dianthus             | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Ilyanassa Obsoleta             | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Leitoscoloplos Fragilis        | 4         |
| Upper    | 2009 | 146_09LTM | 2   | Leitoscoloplos Fragilis        | 2         |
| Upper    | 2009 | 146_09LTM | 1   | Leitoscoloplos Sp.             | 25        |
| Upper    | 2009 | 146_09LTM | 2   | Leitoscoloplos Sp.             | 14        |
| Upper    | 2009 | 146_09LTM | 1   | Mediomastus Ambiseta           | 2         |
| Upper    | 2009 | 146_09LTM | 2   | Mitrella Lunata                | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Monocorophium Acherusicum      | 7         |
| Upper    | 2009 | 146_09LTM | 1   | Mulinia Lateralis              | 36        |
| Upper    | 2009 | 146_09LTM | 2   | Mulinia Lateralis              | 35        |
| Upper    | 2009 | 146_09LTM | 1   | Neanthes Succinea              | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Neanthes Succinea              | 4         |
| Upper    | 2009 | 146_09LTM | 1   | Nematoda                       | P         |
| Upper    | 2009 | 146_09LTM | 2   | Nematoda                       | P         |
| Upper    | 2009 | 146_09LTM | 1   | Ninoe Nigripes                 | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Nudibranchia                   | 4         |
| Upper    | 2009 | 146_09LTM | 2   | Obelia Dichotoma               | P         |
| Upper    | 2009 | 146_09LTM | 1   | Oligochaeta                    | 43        |
| Upper    | 2009 | 146_09LTM | 2   | Oligochaeta                    | 22        |
| Upper    | 2009 | 146_09LTM | 2   | Paracaprella Tenuis            | 4         |
| Upper    | 2009 | 146_09LTM | 1   | Pectinaria Gouldi              | 18        |
| Upper    | 2009 | 146_09LTM | 2   | Pectinaria Gouldi              | 14        |
| Upper    | 2009 | 146_09LTM | 1   | Podarke Obscura                | 1         |
| Upper    | 2009 | 146_09LTM | 2   | Podarke Obscura                | 6         |
| Upper    | 2009 | 146_09LTM | 1   | Polydora Cornuta               | 123       |
| Upper    | 2009 | 146_09LTM | 2   | Polydora Cornuta               | 189       |
| Upper    | 2009 | 146_09LTM | 2   | Polydora Websteri              | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Upper    | 2009 | 146_09LTM | 1   | Rictaxis Punctostriatus        | 5         |
| Upper    | 2009 | 146_09LTM | 2   | Rictaxis Punctostriatus        | 7         |
| Upper    | 2009 | 146_09LTM | 1   | Spio Setosa                    | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Upper    | 2009 | 146_09LTM | 1   | Streblospio Benedicti     | 241       |
| Upper    | 2009 | 146_09LTM | 2   | Streblospio Benedicti     | 180       |
| Upper    | 2009 | 146_09LTM | 1   | Tharyx Acutus             | 4         |
| Upper    | 2009 | 146_09LTM | 2   | Tharyx Acutus             | 6         |
| Upper    | 2009 | 147_09LTM | 2   | Actiniaria                | 1         |
| Upper    | 2009 | 147_09LTM | 1   | Bowerbankia Gracilis      | P         |
| Upper    | 2009 | 147_09LTM | 1   | Capitella Jonesi          | 1         |
| Upper    | 2009 | 147_09LTM | 2   | Cirratulidae              | 4         |
| Upper    | 2009 | 147_09LTM | 1   | Eteone Heteropoda         | 1         |
| Upper    | 2009 | 147_09LTM | 2   | Glycera Americana         | 1         |
| Upper    | 2009 | 147_09LTM | 1   | Halecium Sp.              | P         |
| Upper    | 2009 | 147_09LTM | 1   | Heteromastus Filiformis   | 1         |
| Upper    | 2009 | 147_09LTM | 2   | Heteromastus Filiformis   | 1         |
| Upper    | 2009 | 147_09LTM | 1   | Ilyanassa Obsoleta        | 8         |
| Upper    | 2009 | 147_09LTM | 2   | Ilyanassa Obsoleta        | 22        |
| Upper    | 2009 | 147_09LTM | 1   | Leitoscoloplos Fragilis   | 2         |
| Upper    | 2009 | 147_09LTM | 2   | Leitoscoloplos Fragilis   | 1         |
| Upper    | 2009 | 147_09LTM | 1   | Leitoscoloplos Sp.        | 14        |
| Upper    | 2009 | 147_09LTM | 2   | Leitoscoloplos Sp.        | 10        |
| Upper    | 2009 | 147_09LTM | 2   | Mediomastus Ambiseta      | 9         |
| Upper    | 2009 | 147_09LTM | 1   | Monocorophium Acherusicum | 1         |
| Upper    | 2009 | 147_09LTM | 1   | Mulinia Lateralis         | 3         |
| Upper    | 2009 | 147_09LTM | 2   | Mulinia Lateralis         | 14        |
| Upper    | 2009 | 147_09LTM | 1   | Nematoda                  | P         |
| Upper    | 2009 | 147_09LTM | 2   | Nematoda                  | P         |
| Upper    | 2009 | 147_09LTM | 1   | Obelia Bidentata          | P         |
| Upper    | 2009 | 147_09LTM | 1   | Oligochaeta               | 68        |
| Upper    | 2009 | 147_09LTM | 2   | Oligochaeta               | 91        |
| Upper    | 2009 | 147_09LTM | 1   | Pectinaria Gouldi         | 1         |
| Upper    | 2009 | 147_09LTM | 1   | Polydora Cornuta          | 3         |
| Upper    | 2009 | 147_09LTM | 2   | Polydora Cornuta          | 5         |
| Upper    | 2009 | 147_09LTM | 1   | Streblospio Benedicti     | 2         |
| Upper    | 2009 | 147_09LTM | 2   | Streblospio Benedicti     | 444       |
| Upper    | 2009 | 147_09LTM | 2   | Tellina Agilis            | 1         |
| Upper    | 2009 | 147_09LTM | 1   | Tharyx Acutus             | 10        |
| Upper    | 2009 | 147_09LTM | 2   | Tharyx Acutus             | 7         |
| Upper    | 2009 | 150_09LTM | 2   | Anomia Simplex            | 1         |
| Upper    | 2009 | 150_09LTM | 2   | Balanus Venustus          | 1         |
| Upper    | 2009 | 150_09LTM | 1   | Capitella Capitata        | 2         |
| Upper    | 2009 | 150_09LTM | 2   | Capitella Capitata        | 1         |
| Upper    | 2009 | 150_09LTM | 1   | Capitella Jonesi          | 1         |
| Upper    | 2009 | 150_09LTM | 2   | Capitella Jonesi          | 2         |
| Upper    | 2009 | 150_09LTM | 1   | Cirratulidae              | 7         |
| Upper    | 2009 | 150_09LTM | 2   | Cirratulidae              | 4         |
| Upper    | 2009 | 150_09LTM | 1   | Edwardsia Elegans         | 1         |
| Upper    | 2009 | 150_09LTM | 2   | Eteone Heteropoda         | 3         |
| Upper    | 2009 | 150_09LTM | 1   | Gemma Gemma               | 2         |
| Upper    | 2009 | 150_09LTM | 1   | Gyptis Vittata            | 1         |
| Upper    | 2009 | 150_09LTM | 2   | Gyptis Vittata            | 1         |
| Upper    | 2009 | 150_09LTM | 1   | Halecium Sp.              | P         |
| Upper    | 2009 | 150_09LTM | 1   | Leitoscoloplos Fragilis   | 1         |
| Upper    | 2009 | 150_09LTM | 2   | Leitoscoloplos Fragilis   | 5         |
| Upper    | 2009 | 150_09LTM | 1   | Leitoscoloplos Sp.        | 32        |
| Upper    | 2009 | 150_09LTM | 2   | Leitoscoloplos Sp.        | 54        |
| Upper    | 2009 | 150_09LTM | 1   | Macoma Tenta              | 2         |
| Upper    | 2009 | 150_09LTM | 2   | Macoma Tenta              | 2         |
| Upper    | 2009 | 150_09LTM | 1   | Mulinia Lateralis         | 22        |
| Upper    | 2009 | 150_09LTM | 2   | Mulinia Lateralis         | 49        |
| Upper    | 2009 | 150_09LTM | 1   | Nematoda                  | P         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name         | Abundance |
|----------|------|-----------|-----|-------------------------|-----------|
| Upper    | 2009 | 150_09LTM | 2   | Nematoda                | P         |
| Upper    | 2009 | 150_09LTM | 1   | Nucula Annulata         | 1         |
| Upper    | 2009 | 150_09LTM | 1   | Oligochaeta             | 13        |
| Upper    | 2009 | 150_09LTM | 2   | Oligochaeta             | 6         |
| Upper    | 2009 | 150_09LTM | 1   | Pectinaria Gouldi       | 1         |
| Upper    | 2009 | 150_09LTM | 2   | Pectinaria Gouldi       | 5         |
| Upper    | 2009 | 150_09LTM | 1   | Podarke Obscura         | 2         |
| Upper    | 2009 | 150_09LTM | 1   | Polydora Cornuta        | 15        |
| Upper    | 2009 | 150_09LTM | 2   | Polydora Cornuta        | 29        |
| Upper    | 2009 | 150_09LTM | 2   | Rictaxis Punctostriatus | 1         |
| Upper    | 2009 | 150_09LTM | 1   | Streblospio Benedicti   | 86        |
| Upper    | 2009 | 150_09LTM | 2   | Streblospio Benedicti   | 80        |
| Upper    | 2009 | 150_09LTM | 1   | Tharyx Acutus           | 1         |
| Upper    | 2009 | 150_09LTM | 2   | Tharyx Acutus           | 3         |
| Upper    | 2009 | 151_09LTM | 1   | Ampelisca Abdita        | 1         |
| Upper    | 2009 | 151_09LTM | 1   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 151_09LTM | 2   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 151_09LTM | 2   | Capitella Capitata      | 2         |
| Upper    | 2009 | 151_09LTM | 1   | Cirratulidae            | 13        |
| Upper    | 2009 | 151_09LTM | 2   | Cirratulidae            | 5         |
| Upper    | 2009 | 151_09LTM | 2   | Dipolydora Socialis     | 1         |
| Upper    | 2009 | 151_09LTM | 1   | Eteone Heteropoda       | 1         |
| Upper    | 2009 | 151_09LTM | 2   | Eteone Heteropoda       | 1         |
| Upper    | 2009 | 151_09LTM | 2   | Eumida Sanguinea        | 2         |
| Upper    | 2009 | 151_09LTM | 1   | Glycera Americana       | 1         |
| Upper    | 2009 | 151_09LTM | 2   | Gyptis Vittata          | 3         |
| Upper    | 2009 | 151_09LTM | 2   | Heteromastus Filiformis | 1         |
| Upper    | 2009 | 151_09LTM | 1   | Leitoscoloplos Fragilis | 2         |
| Upper    | 2009 | 151_09LTM | 2   | Leitoscoloplos Fragilis | 2         |
| Upper    | 2009 | 151_09LTM | 1   | Leitoscoloplos Sp.      | 21        |
| Upper    | 2009 | 151_09LTM | 2   | Leitoscoloplos Sp.      | 64        |
| Upper    | 2009 | 151_09LTM | 1   | Mediomastus Ambiseta    | 10        |
| Upper    | 2009 | 151_09LTM | 2   | Mediomastus Ambiseta    | 32        |
| Upper    | 2009 | 151_09LTM | 2   | Mercenaria Mercenaria   | 1         |
| Upper    | 2009 | 151_09LTM | 1   | Mulinia Lateralis       | 5         |
| Upper    | 2009 | 151_09LTM | 2   | Mulinia Lateralis       | 9         |
| Upper    | 2009 | 151_09LTM | 2   | Neanthes Succinea       | 1         |
| Upper    | 2009 | 151_09LTM | 1   | Nematoda                | P         |
| Upper    | 2009 | 151_09LTM | 2   | Nematoda                | P         |
| Upper    | 2009 | 151_09LTM | 2   | Obelia Bidentata        | P         |
| Upper    | 2009 | 151_09LTM | 2   | Obelia Dichotoma        | P         |
| Upper    | 2009 | 151_09LTM | 1   | Oligochaeta             | 5         |
| Upper    | 2009 | 151_09LTM | 2   | Oligochaeta             | 17        |
| Upper    | 2009 | 151_09LTM | 2   | Pectinaria Gouldi       | 3         |
| Upper    | 2009 | 151_09LTM | 1   | Polydora Cornuta        | 38        |
| Upper    | 2009 | 151_09LTM | 2   | Polydora Cornuta        | 248       |
| Upper    | 2009 | 151_09LTM | 1   | Spurwinkia Salsa        | 1         |
| Upper    | 2009 | 151_09LTM | 1   | Streblospio Benedicti   | 2         |
| Upper    | 2009 | 151_09LTM | 2   | Streblospio Benedicti   | 12        |
| Upper    | 2009 | 151_09LTM | 2   | Syllides Convoluta      | 1         |
| Upper    | 2009 | 151_09LTM | 2   | Tellinidae              | 1         |
| Upper    | 2009 | 151_09LTM | 1   | Tharyx Acutus           | 31        |
| Upper    | 2009 | 151_09LTM | 2   | Tharyx Acutus           | 17        |
| Upper    | 2009 | 152_09LTM | 1   | Ampelisca Abdita        | 5         |
| Upper    | 2009 | 152_09LTM | 1   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 152_09LTM | 2   | Bowerbankia Gracilis    | P         |
| Upper    | 2009 | 152_09LTM | 1   | Capitella Capitata      | 2         |
| Upper    | 2009 | 152_09LTM | 2   | Capitella Capitata      | 3         |
| Upper    | 2009 | 152_09LTM | 1   | Cirratulidae            | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Upper    | 2009 | 152_09LTM | 2   | Cirratulidae              | 1         |
| Upper    | 2009 | 152_09LTM | 1   | Clytia Hemisphaerica      | P         |
| Upper    | 2009 | 152_09LTM | 2   | Eteone Heteropoda         | 1         |
| Upper    | 2009 | 152_09LTM | 1   | Hemicyclops Sp.           | 2         |
| Upper    | 2009 | 152_09LTM | 2   | Ilyanassa Obsoleta        | 3         |
| Upper    | 2009 | 152_09LTM | 2   | Leitoscoloplos Sp.        | 2         |
| Upper    | 2009 | 152_09LTM | 1   | Mediomastus Ambiseta      | 1         |
| Upper    | 2009 | 152_09LTM | 1   | Microprotopus Raneyi      | 1         |
| Upper    | 2009 | 152_09LTM | 1   | Nematoda                  | P         |
| Upper    | 2009 | 152_09LTM | 2   | Nematoda                  | P         |
| Upper    | 2009 | 152_09LTM | 2   | Oligochaeta               | 2         |
| Upper    | 2009 | 152_09LTM | 2   | Palaemonetes Vulgaris     | 2         |
| Upper    | 2009 | 152_09LTM | 1   | Polydora Cornuta          | 4         |
| Upper    | 2009 | 152_09LTM | 2   | Polydora Cornuta          | 2         |
| Upper    | 2009 | 152_09LTM | 2   | Streblospio Benedicti     | 3         |
| Upper    | 2009 | 152_09LTM | 1   | Tharyx Acutus             | 1         |
| Upper    | 2009 | 152_09LTM | 2   | Tharyx Acutus             | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Anadara Transversa        | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Ancistrosyllis Hartmanae  | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Ancula Gibbosa            | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Apocorophium Acutum       | 1         |
| Upper    | 2009 | 154_09LTM | 2   | Apocorophium Acutum       | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Autolytus Prolifer        | 1         |
| Upper    | 2009 | 154_09LTM | 2   | Boccardiella Hamata       | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Bowerbankia Gracilis      | P         |
| Upper    | 2009 | 154_09LTM | 2   | Bowerbankia Gracilis      | P         |
| Upper    | 2009 | 154_09LTM | 1   | Capitella Capitata        | 2         |
| Upper    | 2009 | 154_09LTM | 2   | Capitella Capitata        | 5         |
| Upper    | 2009 | 154_09LTM | 1   | Capitella Jonesi          | 1         |
| Upper    | 2009 | 154_09LTM | 2   | Capitella Jonesi          | 5         |
| Upper    | 2009 | 154_09LTM | 1   | Carazziella Hobsonae      | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Cirratulidae              | 5         |
| Upper    | 2009 | 154_09LTM | 2   | Cirratulidae              | 2         |
| Upper    | 2009 | 154_09LTM | 1   | Clytia Gracilis           | P         |
| Upper    | 2009 | 154_09LTM | 1   | Clytia Hemisphaerica      | P         |
| Upper    | 2009 | 154_09LTM | 2   | Clytia Hemisphaerica      | P         |
| Upper    | 2009 | 154_09LTM | 1   | Crepidula Convexa         | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Dipolydora Socialis       | 50        |
| Upper    | 2009 | 154_09LTM | 2   | Dipolydora Socialis       | 21        |
| Upper    | 2009 | 154_09LTM | 2   | Dodecaceria Sp.           | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Elasmopus Laevis          | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Eteone Heteropoda         | 10        |
| Upper    | 2009 | 154_09LTM | 2   | Eteone Heteropoda         | 2         |
| Upper    | 2009 | 154_09LTM | 1   | Eumida Sanguinea          | 14        |
| Upper    | 2009 | 154_09LTM | 2   | Eumida Sanguinea          | 13        |
| Upper    | 2009 | 154_09LTM | 1   | Gyptis Vittata            | 1         |
| Upper    | 2009 | 154_09LTM | 2   | Gyptis Vittata            | 3         |
| Upper    | 2009 | 154_09LTM | 1   | Heteromastus Filiformis   | 2         |
| Upper    | 2009 | 154_09LTM | 2   | Ilyanassa Obsoleta        | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Leitoscoloplos Sp.        | 5         |
| Upper    | 2009 | 154_09LTM | 2   | Leitoscoloplos Sp.        | 5         |
| Upper    | 2009 | 154_09LTM | 2   | Lepidonotus Squamatus     | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Lyonsia Hyalina           | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Mediomastus Ambiseta      | 14        |
| Upper    | 2009 | 154_09LTM | 2   | Mediomastus Ambiseta      | 8         |
| Upper    | 2009 | 154_09LTM | 1   | Mercenaria Mercenaria     | 5         |
| Upper    | 2009 | 154_09LTM | 2   | Mercenaria Mercenaria     | 3         |
| Upper    | 2009 | 154_09LTM | 1   | Monocorophium Acherusicum | 4         |
| Upper    | 2009 | 154_09LTM | 2   | Monocorophium Acherusicum | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Upper    | 2009 | 154_09LTM | 1   | Mulinia Lateralis              | 7         |
| Upper    | 2009 | 154_09LTM | 2   | Mulinia Lateralis              | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Neanthes Succinea              | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Nematoda                       | P         |
| Upper    | 2009 | 154_09LTM | 2   | Nematoda                       | P         |
| Upper    | 2009 | 154_09LTM | 2   | Nereidae                       | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Obelia Bidentata               | P         |
| Upper    | 2009 | 154_09LTM | 1   | Obelia Dichotoma               | P         |
| Upper    | 2009 | 154_09LTM | 2   | Obelia Dichotoma               | P         |
| Upper    | 2009 | 154_09LTM | 1   | Odontosyllis Fulgurans         | 3         |
| Upper    | 2009 | 154_09LTM | 2   | Odontosyllis Fulgurans         | 4         |
| Upper    | 2009 | 154_09LTM | 1   | Oligochaeta                    | 8         |
| Upper    | 2009 | 154_09LTM | 2   | Oligochaeta                    | 18        |
| Upper    | 2009 | 154_09LTM | 1   | Pectinaria Gouldi              | 1         |
| Upper    | 2009 | 154_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Podarke Obscura                | 1         |
| Upper    | 2009 | 154_09LTM | 2   | Podarke Obscura                | 9         |
| Upper    | 2009 | 154_09LTM | 1   | Polydora Cornuta               | 1207      |
| Upper    | 2009 | 154_09LTM | 2   | Polydora Cornuta               | 461       |
| Upper    | 2009 | 154_09LTM | 1   | Polydora Sp.                   | 1         |
| Upper    | 2009 | 154_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Prionospio Steenstrupi         | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Spurwinkia Salsa               | 1         |
| Upper    | 2009 | 154_09LTM | 1   | Streblospio Benedicti          | 6         |
| Upper    | 2009 | 154_09LTM | 2   | Streblospio Benedicti          | 9         |
| Upper    | 2009 | 154_09LTM | 1   | Tharyx Acutus                  | 29        |
| Upper    | 2009 | 154_09LTM | 2   | Tharyx Acutus                  | 9         |
| Upper    | 2009 | 154_09LTM | 2   | Urosalpinx Cinerea             | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Anachis Lafresnayi             | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Anadara Transversa             | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Anomia Simplex                 | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Balanus Venustus               | 5         |
| Upper    | 2009 | 155_09LTM | 1   | Capitella Capitata             | 2         |
| Upper    | 2009 | 155_09LTM | 2   | Capitella Capitata             | 7         |
| Upper    | 2009 | 155_09LTM | 2   | Cirratulidae                   | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Cliona Celata                  | 2         |
| Upper    | 2009 | 155_09LTM | 2   | Cliona Vastifica               | 4         |
| Upper    | 2009 | 155_09LTM | 2   | Clytia Gracilis                | P         |
| Upper    | 2009 | 155_09LTM | 2   | Crepidula Fornicata            | 9         |
| Upper    | 2009 | 155_09LTM | 2   | Dipolydora Socialis            | 1         |
| Upper    | 2009 | 155_09LTM | 1   | Elasmopus Laevis               | 1         |
| Upper    | 2009 | 155_09LTM | 1   | Gammarus Mucronatus            | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Gammarus Mucronatus            | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Halecium Sp.                   | P         |
| Upper    | 2009 | 155_09LTM | 1   | Hemicyclops Sp.                | 1         |
| Upper    | 2009 | 155_09LTM | 1   | Heteromastus Filiformis        | 1         |
| Upper    | 2009 | 155_09LTM | 1   | Ilyanassa Obsoleta             | 12        |
| Upper    | 2009 | 155_09LTM | 2   | Ilyanassa Obsoleta             | 34        |
| Upper    | 2009 | 155_09LTM | 1   | Leitoscoloplos Sp.             | 6         |
| Upper    | 2009 | 155_09LTM | 1   | Mediomastus Ambiseta           | 2         |
| Upper    | 2009 | 155_09LTM | 1   | Melita Nitida                  | 2         |
| Upper    | 2009 | 155_09LTM | 2   | Melita Nitida                  | 7         |
| Upper    | 2009 | 155_09LTM | 2   | Mercenaria Mercenaria          | 1         |
| Upper    | 2009 | 155_09LTM | 1   | Microdeutopus Gryllotalpa      | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Microporella Ciliata           | P         |
| Upper    | 2009 | 155_09LTM | 1   | Neanthes Succinea              | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Neanthes Succinea              | 1         |
| Upper    | 2009 | 155_09LTM | 1   | Nematoda                       | P         |
| Upper    | 2009 | 155_09LTM | 2   | Nematoda                       | P         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Upper    | 2009 | 155_09LTM | 2   | Nucula Proxima                       | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Oligochaeta                          | 2         |
| Upper    | 2009 | 155_09LTM | 1   | Polydora Cornuta                     | 1         |
| Upper    | 2009 | 155_09LTM | 2   | Polydora Cornuta                     | 5         |
| Upper    | 2009 | 155_09LTM | 2   | Schizoporella Cornuta                | P         |
| Upper    | 2009 | 155_09LTM | 2   | Schizoporella Unicornis              | P         |
| Upper    | 2009 | 155_09LTM | 1   | Streblospio Benedicti                | 4         |
| Upper    | 2009 | 155_09LTM | 2   | Streblospio Benedicti                | 2         |
| Upper    | 2009 | 155_09LTM | 2   | Tagelus Divisus                      | 1         |
| Upper    | 2009 | 155_09LTM | 1   | Tharyx Acutus                        | 3         |
| Lower    | 2009 | 202_09LTM | 1   | Anomia Simplex                       | 2         |
| Lower    | 2009 | 202_09LTM | 1   | Apocorophium Acutum                  | 3         |
| Lower    | 2009 | 202_09LTM | 1   | Autolytus Prolifer                   | 4         |
| Lower    | 2009 | 202_09LTM | 1   | Bivalvia                             | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Boccardiella Hamata                  | 3         |
| Lower    | 2009 | 202_09LTM | 2   | Boccardiella Hamata                  | 3         |
| Lower    | 2009 | 202_09LTM | 2   | Bowerbankia Gracilis                 | P         |
| Lower    | 2009 | 202_09LTM | 1   | Capitella Capitata                   | 8         |
| Lower    | 2009 | 202_09LTM | 2   | Capitella Capitata                   | 25        |
| Lower    | 2009 | 202_09LTM | 2   | Capitella Jonesi                     | 6         |
| Lower    | 2009 | 202_09LTM | 1   | Cirratulidae                         | 16        |
| Lower    | 2009 | 202_09LTM | 2   | Cirratulidae                         | 49        |
| Lower    | 2009 | 202_09LTM | 1   | Cliona Celata                        | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Cliona Celata                        | 2         |
| Lower    | 2009 | 202_09LTM | 1   | Cliona Vastifica                     | 2         |
| Lower    | 2009 | 202_09LTM | 2   | Cliona Vastifica                     | 11        |
| Lower    | 2009 | 202_09LTM | 1   | Clytia Hemisphaerica                 | P         |
| Lower    | 2009 | 202_09LTM | 2   | Clytia Hemisphaerica                 | P         |
| Lower    | 2009 | 202_09LTM | 2   | Crepidula Convexa                    | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Crepidula Fornicata                  | 2         |
| Lower    | 2009 | 202_09LTM | 2   | Crepidula Fornicata                  | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Cryptosula Pallasiana                | P         |
| Lower    | 2009 | 202_09LTM | 2   | Cryptosula Pallasiana                | P         |
| Lower    | 2009 | 202_09LTM | 1   | Dipolydora Socialis                  | 4         |
| Lower    | 2009 | 202_09LTM | 2   | Dipolydora Socialis                  | 27        |
| Lower    | 2009 | 202_09LTM | 2   | Dorvillea (Schistomeringos) Annulata | 4         |
| Lower    | 2009 | 202_09LTM | 1   | Dyspanopeus Sayi                     | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Dyspanopeus Sayi                     | 11        |
| Lower    | 2009 | 202_09LTM | 1   | Elasmopus Laevis                     | 2         |
| Lower    | 2009 | 202_09LTM | 2   | Elasmopus Laevis                     | 5         |
| Lower    | 2009 | 202_09LTM | 1   | Eteone Heteropoda                    | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Eteone Heteropoda                    | 2         |
| Lower    | 2009 | 202_09LTM | 1   | Eumida Sanguinea                     | 6         |
| Lower    | 2009 | 202_09LTM | 2   | Eumida Sanguinea                     | 9         |
| Lower    | 2009 | 202_09LTM | 1   | Eupleura Caudata                     | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Eupleura Caudata                     | 2         |
| Lower    | 2009 | 202_09LTM | 2   | Gemma Gemma                          | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Glycera Dibranchiata                 | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Halecium Halecinum                   | P         |
| Lower    | 2009 | 202_09LTM | 2   | Heteromastus Filiformis              | 6         |
| Lower    | 2009 | 202_09LTM | 1   | Heteromysis Formosa                  | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Heteromysis Formosa                  | 2         |
| Lower    | 2009 | 202_09LTM | 1   | Hydroides Dianthus                   | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Hydroides Dianthus                   | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Ianiropsis Sp. 1                     | 3         |
| Lower    | 2009 | 202_09LTM | 1   | Leitoscoloplos Sp.                   | 2         |
| Lower    | 2009 | 202_09LTM | 2   | Leitoscoloplos Sp.                   | 6         |
| Lower    | 2009 | 202_09LTM | 1   | Mediomastus Ambiseta                 | 4         |
| Lower    | 2009 | 202_09LTM | 2   | Mediomastus Ambiseta                 | 14        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Lower    | 2009 | 202_09LTM | 1   | Mercenaria Mercenaria     | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Mercenaria Mercenaria     | 10        |
| Lower    | 2009 | 202_09LTM | 1   | Microdeutopus Gryllotalpa | 8         |
| Lower    | 2009 | 202_09LTM | 2   | Microdeutopus Gryllotalpa | 3         |
| Lower    | 2009 | 202_09LTM | 1   | Microporella Ciliata      | P         |
| Lower    | 2009 | 202_09LTM | 2   | Microporella Ciliata      | P         |
| Lower    | 2009 | 202_09LTM | 1   | Monocorophium Acherusicum | 5         |
| Lower    | 2009 | 202_09LTM | 2   | Monocorophium Acherusicum | 5         |
| Lower    | 2009 | 202_09LTM | 1   | Monocorophium Insidiosum  | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Neanthes Arenaceodentata  | 8         |
| Lower    | 2009 | 202_09LTM | 2   | Neanthes Arenaceodentata  | 24        |
| Lower    | 2009 | 202_09LTM | 1   | Neanthes Succinea         | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Neanthes Succinea         | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Nematoda                  | P         |
| Lower    | 2009 | 202_09LTM | 2   | Nematoda                  | P         |
| Lower    | 2009 | 202_09LTM | 1   | Obelia Bidentata          | P         |
| Lower    | 2009 | 202_09LTM | 1   | Obelia Dichotoma          | P         |
| Lower    | 2009 | 202_09LTM | 2   | Obelia Dichotoma          | P         |
| Lower    | 2009 | 202_09LTM | 1   | Odontosyllis Fulgurans    | 3         |
| Lower    | 2009 | 202_09LTM | 2   | Odontosyllis Fulgurans    | 7         |
| Lower    | 2009 | 202_09LTM | 1   | Oligochaeta               | 159       |
| Lower    | 2009 | 202_09LTM | 2   | Oligochaeta               | 183       |
| Lower    | 2009 | 202_09LTM | 1   | Paracaprella Tenuis       | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Paracaprella Tenuis       | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Pectinaria Gouldi         | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Podarke Obscura           | 36        |
| Lower    | 2009 | 202_09LTM | 2   | Podarke Obscura           | 53        |
| Lower    | 2009 | 202_09LTM | 1   | Polydora Cornuta          | 93        |
| Lower    | 2009 | 202_09LTM | 2   | Polydora Cornuta          | 227       |
| Lower    | 2009 | 202_09LTM | 2   | Polydora Websteri         | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Prionospio Heterobranchia | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Sabellaria Vulgaris       | 1         |
| Lower    | 2009 | 202_09LTM | 1   | Schizoporella Unicornis   | P         |
| Lower    | 2009 | 202_09LTM | 2   | Schizoporella Unicornis   | P         |
| Lower    | 2009 | 202_09LTM | 2   | Spio Setosa               | 2         |
| Lower    | 2009 | 202_09LTM | 1   | Streblospio Benedicti     | 36        |
| Lower    | 2009 | 202_09LTM | 2   | Streblospio Benedicti     | 32        |
| Lower    | 2009 | 202_09LTM | 1   | Stylochus Ellipticus      | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Stylochus Ellipticus      | 1         |
| Lower    | 2009 | 202_09LTM | 2   | Syllis Gracilis           | 2         |
| Lower    | 2009 | 202_09LTM | 1   | Tharyx Acutus             | 114       |
| Lower    | 2009 | 202_09LTM | 2   | Tharyx Acutus             | 105       |
| Lower    | 2009 | 204_09LTM | 2   | Anadara Transversa        | 2         |
| Lower    | 2009 | 204_09LTM | 2   | Anomia Sp.                | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Balanus Venustus          | 11        |
| Lower    | 2009 | 204_09LTM | 1   | Bittium Alternatum        | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Bivalvia                  | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Bowerbankia Gracilis      | P         |
| Lower    | 2009 | 204_09LTM | 2   | Bugula Stolonifera        | P         |
| Lower    | 2009 | 204_09LTM | 1   | Capitella Capitata        | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Capitella Capitata        | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Capitella Jonesi          | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Cirratulidae              | 5         |
| Lower    | 2009 | 204_09LTM | 1   | Eteone Heteropoda         | 3         |
| Lower    | 2009 | 204_09LTM | 2   | Eteone Heteropoda         | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Eumida Sanguinea          | 3         |
| Lower    | 2009 | 204_09LTM | 2   | Halecium Sp.              | P         |
| Lower    | 2009 | 204_09LTM | 1   | Leitoscoloplos Fragilis   | 5         |
| Lower    | 2009 | 204_09LTM | 2   | Leitoscoloplos Fragilis   | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Lower    | 2009 | 204_09LTM | 1   | Leitoscoloplos Sp.        | 49        |
| Lower    | 2009 | 204_09LTM | 2   | Leitoscoloplos Sp.        | 109       |
| Lower    | 2009 | 204_09LTM | 1   | Leptinogaster Major       | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Leptinogaster Major       | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Lyonsia Hyalina           | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Macoma Tenta              | 2         |
| Lower    | 2009 | 204_09LTM | 2   | Mediomastus Ambiseta      | 3         |
| Lower    | 2009 | 204_09LTM | 1   | Mercenaria Mercenaria     | 2         |
| Lower    | 2009 | 204_09LTM | 2   | Mercenaria Mercenaria     | 11        |
| Lower    | 2009 | 204_09LTM | 2   | Microdeutopus Gryllotalpa | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Molgula Sp.               | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Mulinia Lateralis         | 125       |
| Lower    | 2009 | 204_09LTM | 1   | Mya Arenaria              | 1         |
| Lower    | 2009 | 204_09LTM | 1   | Nephtys Incisa            | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Obelia Dichotoma          | P         |
| Lower    | 2009 | 204_09LTM | 1   | Oligochaeta               | 12        |
| Lower    | 2009 | 204_09LTM | 2   | Oligochaeta               | 17        |
| Lower    | 2009 | 204_09LTM | 1   | Pectinaria Gouldi         | 16        |
| Lower    | 2009 | 204_09LTM | 2   | Pectinaria Gouldi         | 94        |
| Lower    | 2009 | 204_09LTM | 2   | Pectinaria Gouldi         | 1         |
| Lower    | 2009 | 204_09LTM | 1   | Podarke Obscura           | 2         |
| Lower    | 2009 | 204_09LTM | 2   | Podarke Obscura           | 1         |
| Lower    | 2009 | 204_09LTM | 1   | Polydora Cornuta          | 2         |
| Lower    | 2009 | 204_09LTM | 2   | Polydora Cornuta          | 6         |
| Lower    | 2009 | 204_09LTM | 2   | Rictaxis Punctostriatus   | 1         |
| Lower    | 2009 | 204_09LTM | 2   | Sabellaria Vulgaris       | 1         |
| Lower    | 2009 | 204_09LTM | 1   | Streblospio Benedicti     | 18        |
| Lower    | 2009 | 204_09LTM | 2   | Streblospio Benedicti     | 45        |
| Lower    | 2009 | 204_09LTM | 2   | Tellinidae                | 3         |
| Lower    | 2009 | 204_09LTM | 1   | Tharyx Acutus             | 18        |
| Lower    | 2009 | 204_09LTM | 2   | Tharyx Acutus             | 9         |
| Lower    | 2009 | 207_09LTM | 1   | Callinectes Sapidus       | 1         |
| Lower    | 2009 | 207_09LTM | 1   | Capitella Capitata        | 1         |
| Lower    | 2009 | 207_09LTM | 1   | Cirratulidae              | 3         |
| Lower    | 2009 | 207_09LTM | 2   | Cirratulidae              | 3         |
| Lower    | 2009 | 207_09LTM | 1   | Clytia Hemisphaerica      | P         |
| Lower    | 2009 | 207_09LTM | 2   | Clytia Hemisphaerica      | P         |
| Lower    | 2009 | 207_09LTM | 2   | Dyspanopeus Sayi          | 1         |
| Lower    | 2009 | 207_09LTM | 1   | Eteone Heteropoda         | 4         |
| Lower    | 2009 | 207_09LTM | 2   | Eteone Heteropoda         | 5         |
| Lower    | 2009 | 207_09LTM | 2   | Gyptis Vittata            | 1         |
| Lower    | 2009 | 207_09LTM | 1   | Leitoscoloplos Fragilis   | 49        |
| Lower    | 2009 | 207_09LTM | 2   | Leitoscoloplos Fragilis   | 41        |
| Lower    | 2009 | 207_09LTM | 1   | Leitoscoloplos Sp.        | 57        |
| Lower    | 2009 | 207_09LTM | 2   | Leitoscoloplos Sp.        | 101       |
| Lower    | 2009 | 207_09LTM | 2   | Mediomastus Ambiseta      | 1         |
| Lower    | 2009 | 207_09LTM | 1   | Microphthalmus Aberrans   | 3         |
| Lower    | 2009 | 207_09LTM | 1   | Nematoda                  | P         |
| Lower    | 2009 | 207_09LTM | 2   | Nematoda                  | P         |
| Lower    | 2009 | 207_09LTM | 1   | Oligochaeta               | 104       |
| Lower    | 2009 | 207_09LTM | 2   | Oligochaeta               | 36        |
| Lower    | 2009 | 207_09LTM | 2   | Pectinaria Gouldi         | 6         |
| Lower    | 2009 | 207_09LTM | 1   | Polydora Cornuta          | 1         |
| Lower    | 2009 | 207_09LTM | 2   | Polydora Cornuta          | 2         |
| Lower    | 2009 | 207_09LTM | 1   | Streblospio Benedicti     | 139       |
| Lower    | 2009 | 207_09LTM | 2   | Streblospio Benedicti     | 393       |
| Lower    | 2009 | 207_09LTM | 1   | Tharyx Acutus             | 17        |
| Lower    | 2009 | 207_09LTM | 2   | Tharyx Acutus             | 24        |
| Lower    | 2009 | 208_09LTM | 1   | Capitella Capitata        | 234       |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Lower    | 2009 | 208_09LTM | 2   | Capitella Capitata                   | 172       |
| Lower    | 2009 | 208_09LTM | 1   | Capitella Jonesi                     | 6         |
| Lower    | 2009 | 208_09LTM | 2   | Capitella Jonesi                     | 5         |
| Lower    | 2009 | 208_09LTM | 1   | Cirratulidae                         | 39        |
| Lower    | 2009 | 208_09LTM | 2   | Cirratulidae                         | 54        |
| Lower    | 2009 | 208_09LTM | 1   | Crepidula Convexa                    | 5         |
| Lower    | 2009 | 208_09LTM | 2   | Crepidula Convexa                    | 1         |
| Lower    | 2009 | 208_09LTM | 2   | Crepidula Fornicata                  | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Cymadusa Compta                      | 1         |
| Lower    | 2009 | 208_09LTM | 2   | Dorvillea (Schistomeringos) Annulata | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Dyspanopeus Sayi                     | 3         |
| Lower    | 2009 | 208_09LTM | 2   | Dyspanopeus Sayi                     | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Eteone Heteropoda                    | 1         |
| Lower    | 2009 | 208_09LTM | 2   | Eteone Heteropoda                    | 6         |
| Lower    | 2009 | 208_09LTM | 1   | Heteromastus Filiformis              | 5         |
| Lower    | 2009 | 208_09LTM | 2   | Heteromastus Filiformis              | 10        |
| Lower    | 2009 | 208_09LTM | 1   | Ilyanassa Obsoleta                   | 5         |
| Lower    | 2009 | 208_09LTM | 2   | Ilyanassa Obsoleta                   | 11        |
| Lower    | 2009 | 208_09LTM | 1   | Leitoscoloplos Fragilis              | 2         |
| Lower    | 2009 | 208_09LTM | 1   | Leitoscoloplos Sp.                   | 2         |
| Lower    | 2009 | 208_09LTM | 2   | Leitoscoloplos Sp.                   | 2         |
| Lower    | 2009 | 208_09LTM | 1   | Mediomastus Ambiseta                 | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Mercenaria Mercenaria                | 1         |
| Lower    | 2009 | 208_09LTM | 2   | Mitrella Lunata                      | 2         |
| Lower    | 2009 | 208_09LTM | 2   | Mulinia Lateralis                    | 2         |
| Lower    | 2009 | 208_09LTM | 1   | Neanthes Arenaceodontata             | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 208_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 208_09LTM | 2   | Notomastus Latericeus                | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Oligochaeta                          | 28        |
| Lower    | 2009 | 208_09LTM | 2   | Oligochaeta                          | 27        |
| Lower    | 2009 | 208_09LTM | 1   | Palaemonetes Pugio                   | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Pectinaria Gouldi                    | 1         |
| Lower    | 2009 | 208_09LTM | 2   | Pectinaria Gouldi                    | 1         |
| Lower    | 2009 | 208_09LTM | 1   | Polydora Cornuta                     | 33        |
| Lower    | 2009 | 208_09LTM | 2   | Polydora Cornuta                     | 59        |
| Lower    | 2009 | 208_09LTM | 2   | Spio Setosa                          | 48        |
| Lower    | 2009 | 208_09LTM | 1   | Streblospio Benedicti                | 212       |
| Lower    | 2009 | 208_09LTM | 2   | Streblospio Benedicti                | 225       |
| Lower    | 2009 | 208_09LTM | 1   | Tharyx Acutus                        | 245       |
| Lower    | 2009 | 208_09LTM | 2   | Tharyx Acutus                        | 202       |
| Lower    | 2009 | 211_09LTM | 1   | Anachis Lafresnayi                   | 1         |
| Lower    | 2009 | 211_09LTM | 1   | Capitella Capitata                   | 1         |
| Lower    | 2009 | 211_09LTM | 2   | Capitella Capitata                   | 3         |
| Lower    | 2009 | 211_09LTM | 2   | Capitella Jonesi                     | 3         |
| Lower    | 2009 | 211_09LTM | 1   | Cirratulidae                         | 88        |
| Lower    | 2009 | 211_09LTM | 2   | Cirratulidae                         | 463       |
| Lower    | 2009 | 211_09LTM | 2   | Dyspanopeus Sayi                     | 4         |
| Lower    | 2009 | 211_09LTM | 1   | Eteone Heteropoda                    | 6         |
| Lower    | 2009 | 211_09LTM | 2   | Eteone Heteropoda                    | 2         |
| Lower    | 2009 | 211_09LTM | 1   | Gyptis Vittata                       | 1         |
| Lower    | 2009 | 211_09LTM | 1   | Leitoscoloplos Fragilis              | 5         |
| Lower    | 2009 | 211_09LTM | 1   | Leitoscoloplos Sp.                   | 17        |
| Lower    | 2009 | 211_09LTM | 2   | Leitoscoloplos Sp.                   | 4         |
| Lower    | 2009 | 211_09LTM | 1   | Mediomastus Ambiseta                 | 3         |
| Lower    | 2009 | 211_09LTM | 1   | Mercenaria Mercenaria                | 1         |
| Lower    | 2009 | 211_09LTM | 2   | Mercenaria Mercenaria                | 20        |
| Lower    | 2009 | 211_09LTM | 1   | Mulinia Lateralis                    | 5         |
| Lower    | 2009 | 211_09LTM | 2   | Mulinia Lateralis                    | 145       |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name             | Abundance |
|----------|------|-----------|-----|-----------------------------|-----------|
| Lower    | 2009 | 211_09LTM | 2   | Neanthes Succinea           | 1         |
| Lower    | 2009 | 211_09LTM | 1   | Nematoda                    | P         |
| Lower    | 2009 | 211_09LTM | 2   | Nematoda                    | P         |
| Lower    | 2009 | 211_09LTM | 2   | Notomastus Latericeus       | 3         |
| Lower    | 2009 | 211_09LTM | 1   | Oligochaeta                 | 23        |
| Lower    | 2009 | 211_09LTM | 2   | Oligochaeta                 | 44        |
| Lower    | 2009 | 211_09LTM | 2   | Pagurus Longicarpus         | 1         |
| Lower    | 2009 | 211_09LTM | 1   | Pectinaria Gouldi           | 14        |
| Lower    | 2009 | 211_09LTM | 2   | Pectinaria Gouldi           | 1         |
| Lower    | 2009 | 211_09LTM | 2   | Podarke Obscura             | 3         |
| Lower    | 2009 | 211_09LTM | 1   | Polydora Cornuta            | 5         |
| Lower    | 2009 | 211_09LTM | 2   | Polydora Cornuta            | 25        |
| Lower    | 2009 | 211_09LTM | 1   | Rictaxis Punctostriatus     | 3         |
| Lower    | 2009 | 211_09LTM | 1   | Streblospio Benedicti       | 253       |
| Lower    | 2009 | 211_09LTM | 2   | Streblospio Benedicti       | 82        |
| Lower    | 2009 | 211_09LTM | 1   | Tharyx Acutus               | 77        |
| Lower    | 2009 | 211_09LTM | 2   | Tharyx Acutus               | 226       |
| Lower    | 2009 | 212_09LTM | 1   | Ampelisca Abdita            | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Capitella Capitata          | 7         |
| Lower    | 2009 | 212_09LTM | 2   | Capitella Capitata          | 15        |
| Lower    | 2009 | 212_09LTM | 2   | Capitella Jonesi            | 1         |
| Lower    | 2009 | 212_09LTM | 2   | Eteone Heteropoda           | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Gemma Gemma                 | 22        |
| Lower    | 2009 | 212_09LTM | 2   | Gemma Gemma                 | 9         |
| Lower    | 2009 | 212_09LTM | 1   | Heteromastus Filiformis     | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Hutchinsoniella Macracantha | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Ilyanassa Obsoleta          | 36        |
| Lower    | 2009 | 212_09LTM | 2   | Ilyanassa Obsoleta          | 4         |
| Lower    | 2009 | 212_09LTM | 1   | Leitoscoloplos Fragilis     | 23        |
| Lower    | 2009 | 212_09LTM | 2   | Leitoscoloplos Fragilis     | 10        |
| Lower    | 2009 | 212_09LTM | 1   | Leitoscoloplos Sp.          | 73        |
| Lower    | 2009 | 212_09LTM | 2   | Leitoscoloplos Sp.          | 62        |
| Lower    | 2009 | 212_09LTM | 2   | Macoma Tenta                | 3         |
| Lower    | 2009 | 212_09LTM | 1   | Mediomastus Ambiseta        | 8         |
| Lower    | 2009 | 212_09LTM | 2   | Mediomastus Ambiseta        | 9         |
| Lower    | 2009 | 212_09LTM | 1   | Mercenaria Mercenaria       | 2         |
| Lower    | 2009 | 212_09LTM | 2   | Mercenaria Mercenaria       | 5         |
| Lower    | 2009 | 212_09LTM | 2   | Mitrella Lunata             | 2         |
| Lower    | 2009 | 212_09LTM | 1   | Mulinia Lateralis           | 30        |
| Lower    | 2009 | 212_09LTM | 2   | Mulinia Lateralis           | 39        |
| Lower    | 2009 | 212_09LTM | 2   | Neanthes Succinea           | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Nematoda                    | P         |
| Lower    | 2009 | 212_09LTM | 2   | Nematoda                    | P         |
| Lower    | 2009 | 212_09LTM | 1   | Oligochaeta                 | 89        |
| Lower    | 2009 | 212_09LTM | 2   | Oligochaeta                 | 121       |
| Lower    | 2009 | 212_09LTM | 2   | Palaemonetes Vulgaris       | 2         |
| Lower    | 2009 | 212_09LTM | 1   | Pectinaria Gouldi           | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Polydora Cornuta            | 12        |
| Lower    | 2009 | 212_09LTM | 2   | Polydora Cornuta            | 26        |
| Lower    | 2009 | 212_09LTM | 1   | Prionospio Heterobranchia   | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Rictaxis Punctostriatus     | 2         |
| Lower    | 2009 | 212_09LTM | 1   | Streblospio Benedicti       | 157       |
| Lower    | 2009 | 212_09LTM | 2   | Streblospio Benedicti       | 118       |
| Lower    | 2009 | 212_09LTM | 1   | Tellina Agilis              | 1         |
| Lower    | 2009 | 212_09LTM | 1   | Tharyx Acutus               | 7         |
| Lower    | 2009 | 212_09LTM | 2   | Tharyx Acutus               | 1         |
| Lower    | 2009 | 216_09LTM | 2   | Amphiporus Bioculatus       | 1         |
| Lower    | 2009 | 216_09LTM | 2   | Bugula Turrita              | P         |
| Lower    | 2009 | 216_09LTM | 1   | Capitella Capitata          | 16        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Lower    | 2009 | 216_09LTM | 2   | Capitella Capitata             | 9         |
| Lower    | 2009 | 216_09LTM | 1   | Capitella Jonesi               | 2         |
| Lower    | 2009 | 216_09LTM | 2   | Capitella Jonesi               | 1         |
| Lower    | 2009 | 216_09LTM | 1   | Cirratulidae                   | 53        |
| Lower    | 2009 | 216_09LTM | 2   | Cirratulidae                   | 40        |
| Lower    | 2009 | 216_09LTM | 1   | Cylichna Oryza                 | 3         |
| Lower    | 2009 | 216_09LTM | 2   | Cylichna Oryza                 | 2         |
| Lower    | 2009 | 216_09LTM | 2   | Dyspanopeus Sayi               | 1         |
| Lower    | 2009 | 216_09LTM | 1   | Edwardsia Elegans              | 1         |
| Lower    | 2009 | 216_09LTM | 1   | Eteone Heteropoda              | 4         |
| Lower    | 2009 | 216_09LTM | 2   | Eteone Heteropoda              | 4         |
| Lower    | 2009 | 216_09LTM | 1   | Eumida Sanguinea               | 1         |
| Lower    | 2009 | 216_09LTM | 2   | Eumida Sanguinea               | 3         |
| Lower    | 2009 | 216_09LTM | 1   | Glycera Americana              | 1         |
| Lower    | 2009 | 216_09LTM | 1   | Glycera Sp.                    | 1         |
| Lower    | 2009 | 216_09LTM | 2   | Glycinde Solitaria             | 1         |
| Lower    | 2009 | 216_09LTM | 1   | Gyptis Vittata                 | 11        |
| Lower    | 2009 | 216_09LTM | 2   | Gyptis Vittata                 | 3         |
| Lower    | 2009 | 216_09LTM | 1   | Haminoea Solitaria             | 1         |
| Lower    | 2009 | 216_09LTM | 2   | Haminoea Solitaria             | 2         |
| Lower    | 2009 | 216_09LTM | 1   | Leitoscoloplos Fragilis        | 53        |
| Lower    | 2009 | 216_09LTM | 2   | Leitoscoloplos Fragilis        | 29        |
| Lower    | 2009 | 216_09LTM | 1   | Leitoscoloplos Sp.             | 289       |
| Lower    | 2009 | 216_09LTM | 2   | Leitoscoloplos Sp.             | 179       |
| Lower    | 2009 | 216_09LTM | 1   | Macoma Tenta                   | 26        |
| Lower    | 2009 | 216_09LTM | 2   | Macoma Tenta                   | 25        |
| Lower    | 2009 | 216_09LTM | 1   | Mediomastus Ambiseta           | 33        |
| Lower    | 2009 | 216_09LTM | 2   | Mediomastus Ambiseta           | 35        |
| Lower    | 2009 | 216_09LTM | 1   | Mulinia Lateralis              | 77        |
| Lower    | 2009 | 216_09LTM | 2   | Mulinia Lateralis              | 83        |
| Lower    | 2009 | 216_09LTM | 1   | Mya Arenaria                   | 1         |
| Lower    | 2009 | 216_09LTM | 2   | Neanthes Succinea              | 2         |
| Lower    | 2009 | 216_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 216_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 216_09LTM | 2   | Obelia Dichotoma               | P         |
| Lower    | 2009 | 216_09LTM | 1   | Oligochaeta                    | 29        |
| Lower    | 2009 | 216_09LTM | 2   | Oligochaeta                    | 32        |
| Lower    | 2009 | 216_09LTM | 1   | Pectinaria Gouldi              | 9         |
| Lower    | 2009 | 216_09LTM | 2   | Pectinaria Gouldi              | 4         |
| Lower    | 2009 | 216_09LTM | 1   | Podarke Obscura                | 1         |
| Lower    | 2009 | 216_09LTM | 2   | Podarke Obscura                | 3         |
| Lower    | 2009 | 216_09LTM | 1   | Polydora Cornuta               | 26        |
| Lower    | 2009 | 216_09LTM | 2   | Polydora Cornuta               | 42        |
| Lower    | 2009 | 216_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Lower    | 2009 | 216_09LTM | 1   | Rictaxis Punctostriatus        | 16        |
| Lower    | 2009 | 216_09LTM | 2   | Rictaxis Punctostriatus        | 7         |
| Lower    | 2009 | 216_09LTM | 1   | Streblospio Benedicti          | 118       |
| Lower    | 2009 | 216_09LTM | 2   | Streblospio Benedicti          | 93        |
| Lower    | 2009 | 216_09LTM | 1   | Tellinidae                     | 1         |
| Lower    | 2009 | 216_09LTM | 1   | Tharyx Acutus                  | 36        |
| Lower    | 2009 | 216_09LTM | 2   | Tharyx Acutus                  | 9         |
| Lower    | 2009 | 217_09LTM | 2   | Acteocina Canaliculata         | 2         |
| Lower    | 2009 | 217_09LTM | 2   | Ampelisca Abdita               | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Capitella Capitata             | 1         |
| Lower    | 2009 | 217_09LTM | 2   | Capitella Capitata             | 8         |
| Lower    | 2009 | 217_09LTM | 1   | Capitella Jonesi               | 1         |
| Lower    | 2009 | 217_09LTM | 2   | Capitella Jonesi               | 2         |
| Lower    | 2009 | 217_09LTM | 1   | Cirratulidae                   | 4         |
| Lower    | 2009 | 217_09LTM | 2   | Cirratulidae                   | 15        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Lower    | 2009 | 217_09LTM | 1   | Cliona Celata             | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Cylichna Oryza            | 1         |
| Lower    | 2009 | 217_09LTM | 2   | Cylichna Oryza            | 2         |
| Lower    | 2009 | 217_09LTM | 1   | Dipolydora Socialis       | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Eteone Heteropoda         | 5         |
| Lower    | 2009 | 217_09LTM | 2   | Eteone Heteropoda         | 4         |
| Lower    | 2009 | 217_09LTM | 1   | Gemma Gemma               | 1         |
| Lower    | 2009 | 217_09LTM | 2   | Gemma Gemma               | 2         |
| Lower    | 2009 | 217_09LTM | 1   | Gyptis Vittata            | 3         |
| Lower    | 2009 | 217_09LTM | 2   | Gyptis Vittata            | 4         |
| Lower    | 2009 | 217_09LTM | 2   | Haminoea Solitaria        | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Heteromastus Filiformis   | 1         |
| Lower    | 2009 | 217_09LTM | 2   | Heteromastus Filiformis   | 3         |
| Lower    | 2009 | 217_09LTM | 1   | Leitoscoloplos Fragilis   | 358       |
| Lower    | 2009 | 217_09LTM | 2   | Leitoscoloplos Fragilis   | 226       |
| Lower    | 2009 | 217_09LTM | 1   | Leitoscoloplos Sp.        | 166       |
| Lower    | 2009 | 217_09LTM | 2   | Leitoscoloplos Sp.        | 234       |
| Lower    | 2009 | 217_09LTM | 2   | Macoma Tenta              | 8         |
| Lower    | 2009 | 217_09LTM | 1   | Mediomastus Ambiseta      | 55        |
| Lower    | 2009 | 217_09LTM | 2   | Mediomastus Ambiseta      | 52        |
| Lower    | 2009 | 217_09LTM | 1   | Mercenaria Mercenaria     | 4         |
| Lower    | 2009 | 217_09LTM | 2   | Mercenaria Mercenaria     | 6         |
| Lower    | 2009 | 217_09LTM | 1   | Microdeutopus Gryllotalpa | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Molgula Manhattensis      | 3         |
| Lower    | 2009 | 217_09LTM | 1   | Mulinia Lateralis         | 155       |
| Lower    | 2009 | 217_09LTM | 2   | Mulinia Lateralis         | 107       |
| Lower    | 2009 | 217_09LTM | 2   | Neanthes Arenaceodontata  | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Neanthes Succinea         | 2         |
| Lower    | 2009 | 217_09LTM | 2   | Neanthes Succinea         | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Nematoda                  | P         |
| Lower    | 2009 | 217_09LTM | 1   | Oligochaeta               | 94        |
| Lower    | 2009 | 217_09LTM | 2   | Oligochaeta               | 89        |
| Lower    | 2009 | 217_09LTM | 1   | Pectinaria Gouldi         | 5         |
| Lower    | 2009 | 217_09LTM | 2   | Pectinaria Gouldi         | 8         |
| Lower    | 2009 | 217_09LTM | 1   | Podarke Obscura           | 35        |
| Lower    | 2009 | 217_09LTM | 2   | Podarke Obscura           | 27        |
| Lower    | 2009 | 217_09LTM | 1   | Polydora Cornuta          | 18        |
| Lower    | 2009 | 217_09LTM | 2   | Polydora Cornuta          | 29        |
| Lower    | 2009 | 217_09LTM | 1   | Prionospio Heterobranchia | 2         |
| Lower    | 2009 | 217_09LTM | 2   | Prionospio Heterobranchia | 1         |
| Lower    | 2009 | 217_09LTM | 1   | Rictaxis Punctostriatus   | 1         |
| Lower    | 2009 | 217_09LTM | 2   | Rictaxis Punctostriatus   | 5         |
| Lower    | 2009 | 217_09LTM | 2   | Spurwinkia Salsa          | 2         |
| Lower    | 2009 | 217_09LTM | 1   | Streblospio Benedicti     | 154       |
| Lower    | 2009 | 217_09LTM | 2   | Streblospio Benedicti     | 280       |
| Lower    | 2009 | 217_09LTM | 2   | Tellina Agilis            | 1         |
| Lower    | 2009 | 217_09LTM | 2   | Tellinidae                | 3         |
| Lower    | 2009 | 217_09LTM | 1   | Tharyx Acutus             | 51        |
| Lower    | 2009 | 217_09LTM | 2   | Tharyx Acutus             | 80        |
| Lower    | 2009 | 218_09LTM | 1   | Anomia Simplex            | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Boccardiella Hamata       | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Capitella Capitata        | 93        |
| Lower    | 2009 | 218_09LTM | 2   | Capitella Capitata        | 44        |
| Lower    | 2009 | 218_09LTM | 1   | Capitella Jonesi          | 5         |
| Lower    | 2009 | 218_09LTM | 2   | Capitella Jonesi          | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Cirratulidae              | 213       |
| Lower    | 2009 | 218_09LTM | 2   | Cirratulidae              | 96        |
| Lower    | 2009 | 218_09LTM | 1   | Cliona Vastifica          | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Crepidula Convexa         | 7         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Lower    | 2009 | 218_09LTM | 2   | Crepidula Convexa         | 6         |
| Lower    | 2009 | 218_09LTM | 1   | Dyspanopeus Sayi          | 7         |
| Lower    | 2009 | 218_09LTM | 2   | Dyspanopeus Sayi          | 4         |
| Lower    | 2009 | 218_09LTM | 1   | Eteone Heteropoda         | 4         |
| Lower    | 2009 | 218_09LTM | 2   | Eteone Heteropoda         | 1         |
| Lower    | 2009 | 218_09LTM | 2   | Glycera Dibranchiata      | 2         |
| Lower    | 2009 | 218_09LTM | 1   | Gyptis Vittata            | 4         |
| Lower    | 2009 | 218_09LTM | 2   | Gyptis Vittata            | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Heteromastus Filiformis   | 20        |
| Lower    | 2009 | 218_09LTM | 2   | Heteromastus Filiformis   | 15        |
| Lower    | 2009 | 218_09LTM | 1   | Hydroides Dianthus        | 4         |
| Lower    | 2009 | 218_09LTM | 1   | Leitoscoloplos Fragilis   | 1         |
| Lower    | 2009 | 218_09LTM | 2   | Leitoscoloplos Fragilis   | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Leitoscoloplos Sp.        | 5         |
| Lower    | 2009 | 218_09LTM | 2   | Leitoscoloplos Sp.        | 2         |
| Lower    | 2009 | 218_09LTM | 1   | Mediomastus Ambiseta      | 1         |
| Lower    | 2009 | 218_09LTM | 2   | Mediomastus Ambiseta      | 2         |
| Lower    | 2009 | 218_09LTM | 1   | Microphthalmus Sczelkowi  | 2         |
| Lower    | 2009 | 218_09LTM | 2   | Microphthalmus Sczelkowi  | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Monocorophium Insidiosum  | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Mulinia Lateralis         | 1         |
| Lower    | 2009 | 218_09LTM | 2   | Neanthes Arenaceodentata  | 3         |
| Lower    | 2009 | 218_09LTM | 1   | Neanthes Succinea         | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Neanthes Virens           | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Nematoda                  | P         |
| Lower    | 2009 | 218_09LTM | 1   | Nereidae                  | 4         |
| Lower    | 2009 | 218_09LTM | 1   | Oligochaeta               | 176       |
| Lower    | 2009 | 218_09LTM | 2   | Oligochaeta               | 76        |
| Lower    | 2009 | 218_09LTM | 1   | Pectinaria Gouldi         | 3         |
| Lower    | 2009 | 218_09LTM | 1   | Podarke Obscura           | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Polydora Cornuta          | 45        |
| Lower    | 2009 | 218_09LTM | 2   | Polydora Cornuta          | 36        |
| Lower    | 2009 | 218_09LTM | 1   | Polydora Sp.              | 2         |
| Lower    | 2009 | 218_09LTM | 1   | Prionospio Heterobranchia | 14        |
| Lower    | 2009 | 218_09LTM | 2   | Prionospio Heterobranchia | 8         |
| Lower    | 2009 | 218_09LTM | 1   | Spio Setosa               | 22        |
| Lower    | 2009 | 218_09LTM | 2   | Spio Setosa               | 18        |
| Lower    | 2009 | 218_09LTM | 1   | Streblospio Benedicti     | 166       |
| Lower    | 2009 | 218_09LTM | 2   | Streblospio Benedicti     | 149       |
| Lower    | 2009 | 218_09LTM | 1   | Tellina Agilis            | 1         |
| Lower    | 2009 | 218_09LTM | 1   | Tharyx Acutus             | 228       |
| Lower    | 2009 | 218_09LTM | 2   | Tharyx Acutus             | 230       |
| Lower    | 2009 | 218_09LTM | 2   | Turbellaria               | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Ampelisca Abdita          | 2         |
| Lower    | 2009 | 220_09LTM | 2   | Ampelisca Abdita          | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Amphiporus Bioculatus     | 2         |
| Lower    | 2009 | 220_09LTM | 2   | Anadara Transversa        | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Anomia Simplex            | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Boonea Seminuda           | 1         |
| Lower    | 2009 | 220_09LTM | 2   | Boonea Seminuda           | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Cirratulidae              | 57        |
| Lower    | 2009 | 220_09LTM | 2   | Cirratulidae              | 116       |
| Lower    | 2009 | 220_09LTM | 1   | Crepidula Fornicata       | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Crepidula Plana           | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Dipolydora Socialis       | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Doto Coronata             | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Eteone Heteropoda         | 4         |
| Lower    | 2009 | 220_09LTM | 2   | Eteone Heteropoda         | 4         |
| Lower    | 2009 | 220_09LTM | 1   | Eumida Sanguinea          | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Lower    | 2009 | 220_09LTM | 2   | Gemma Gemma                    | 2         |
| Lower    | 2009 | 220_09LTM | 2   | Glycera Sp.                    | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Gyptis Vittata                 | 2         |
| Lower    | 2009 | 220_09LTM | 2   | Gyptis Vittata                 | 1         |
| Lower    | 2009 | 220_09LTM | 2   | Leitoscoloplos Fragilis        | 4         |
| Lower    | 2009 | 220_09LTM | 1   | Leitoscoloplos Sp.             | 23        |
| Lower    | 2009 | 220_09LTM | 2   | Leitoscoloplos Sp.             | 14        |
| Lower    | 2009 | 220_09LTM | 2   | Leucon Americanus              | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Macoma Tenta                   | 10        |
| Lower    | 2009 | 220_09LTM | 2   | Macoma Tenta                   | 10        |
| Lower    | 2009 | 220_09LTM | 1   | Mediomastus Ambiseta           | 47        |
| Lower    | 2009 | 220_09LTM | 2   | Mediomastus Ambiseta           | 26        |
| Lower    | 2009 | 220_09LTM | 1   | Mercenaria Mercenaria          | 3         |
| Lower    | 2009 | 220_09LTM | 2   | Mercenaria Mercenaria          | 3         |
| Lower    | 2009 | 220_09LTM | 1   | Mitrella Lunata                | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Mulinia Lateralis              | 8         |
| Lower    | 2009 | 220_09LTM | 2   | Mulinia Lateralis              | 32        |
| Lower    | 2009 | 220_09LTM | 1   | Neanthes Arenaceodontata       | 1         |
| Lower    | 2009 | 220_09LTM | 2   | Neanthes Succinea              | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 220_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 220_09LTM | 1   | Odontosyllis Fulgurans         | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Oligochaeta                    | 20        |
| Lower    | 2009 | 220_09LTM | 2   | Oligochaeta                    | 20        |
| Lower    | 2009 | 220_09LTM | 1   | Pectinaria Gouldi              | 24        |
| Lower    | 2009 | 220_09LTM | 2   | Pectinaria Gouldi              | 69        |
| Lower    | 2009 | 220_09LTM | 1   | Phyllodoce Arenae              | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Podarke Obscura                | 28        |
| Lower    | 2009 | 220_09LTM | 2   | Podarke Obscura                | 32        |
| Lower    | 2009 | 220_09LTM | 1   | Polydora Cornuta               | 7         |
| Lower    | 2009 | 220_09LTM | 2   | Polydora Cornuta               | 4         |
| Lower    | 2009 | 220_09LTM | 1   | Potamilla Reniformis           | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 6         |
| Lower    | 2009 | 220_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Rictaxis Punctostriatus        | 2         |
| Lower    | 2009 | 220_09LTM | 2   | Rictaxis Punctostriatus        | 1         |
| Lower    | 2009 | 220_09LTM | 1   | Sabellaria Vulgaris            | 4         |
| Lower    | 2009 | 220_09LTM | 1   | Sacoglossa                     | 1         |
| Lower    | 2009 | 220_09LTM | 2   | Spurwinkia Salsa               | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Streblospio Benedicti          | 72        |
| Lower    | 2009 | 220_09LTM | 2   | Streblospio Benedicti          | 76        |
| Lower    | 2009 | 220_09LTM | 2   | Tellina Agilis                 | 4         |
| Lower    | 2009 | 220_09LTM | 2   | Tellinidae                     | 2         |
| Lower    | 2009 | 220_09LTM | 1   | Tharyx Acutus                  | 101       |
| Lower    | 2009 | 220_09LTM | 2   | Tharyx Acutus                  | 55        |
| Lower    | 2009 | 221_09LTM | 1   | Capitella Capitata             | 1         |
| Lower    | 2009 | 221_09LTM | 2   | Capitella Capitata             | 6         |
| Lower    | 2009 | 221_09LTM | 1   | Cirratulidae                   | 1         |
| Lower    | 2009 | 221_09LTM | 2   | Crepidula Convexa              | 1         |
| Lower    | 2009 | 221_09LTM | 1   | Cymadusa Compta                | 4         |
| Lower    | 2009 | 221_09LTM | 2   | Cymadusa Compta                | 4         |
| Lower    | 2009 | 221_09LTM | 1   | Dyspanopeus Sayi               | 3         |
| Lower    | 2009 | 221_09LTM | 2   | Dyspanopeus Sayi               | 5         |
| Lower    | 2009 | 221_09LTM | 2   | Glycera Americana              | 1         |
| Lower    | 2009 | 221_09LTM | 1   | Hippolyte Zostericola          | 1         |
| Lower    | 2009 | 221_09LTM | 2   | Hippolyte Zostericola          | 4         |
| Lower    | 2009 | 221_09LTM | 1   | Leitoscoloplos Fragilis        | 3         |
| Lower    | 2009 | 221_09LTM | 2   | Leitoscoloplos Fragilis        | 2         |
| Lower    | 2009 | 221_09LTM | 1   | Leitoscoloplos Sp.             | 5         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Lower    | 2009 | 221_09LTM | 2   | Leitoscoloplos Sp.                   | 2         |
| Lower    | 2009 | 221_09LTM | 1   | Mediomastus Ambiseta                 | 3         |
| Lower    | 2009 | 221_09LTM | 1   | Microdeutopus Gryllotalpa            | 1         |
| Lower    | 2009 | 221_09LTM | 1   | Mitrella Lunata                      | 1         |
| Lower    | 2009 | 221_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 221_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 221_09LTM | 1   | Oligochaeta                          | 4         |
| Lower    | 2009 | 221_09LTM | 2   | Oligochaeta                          | 23        |
| Lower    | 2009 | 221_09LTM | 1   | Palaemonetes Vulgaris                | 3         |
| Lower    | 2009 | 221_09LTM | 2   | Palaemonetes Vulgaris                | 1         |
| Lower    | 2009 | 221_09LTM | 1   | Pectinaria Gouldi                    | 1         |
| Lower    | 2009 | 221_09LTM | 2   | Polydora Cornuta                     | 11        |
| Lower    | 2009 | 221_09LTM | 1   | Prionospio (Minuspio) Perkinsi       | 1         |
| Lower    | 2009 | 221_09LTM | 1   | Streblospio Benedicti                | 6         |
| Lower    | 2009 | 221_09LTM | 2   | Streblospio Benedicti                | 50        |
| Lower    | 2009 | 221_09LTM | 1   | Tellinidae                           | 1         |
| Lower    | 2009 | 221_09LTM | 1   | Tharyx Acutus                        | 6         |
| Lower    | 2009 | 221_09LTM | 2   | Tharyx Acutus                        | 1         |
| Lower    | 2009 | 222_09LTM | 1   | Aeverrillia Setigera                 | P         |
| Lower    | 2009 | 222_09LTM | 2   | Ampelisca Abdita                     | 1         |
| Lower    | 2009 | 222_09LTM | 1   | Capitella Capitata                   | 12        |
| Lower    | 2009 | 222_09LTM | 2   | Capitella Capitata                   | 16        |
| Lower    | 2009 | 222_09LTM | 1   | Cirratulidae                         | 1         |
| Lower    | 2009 | 222_09LTM | 2   | Cirratulidae                         | 4         |
| Lower    | 2009 | 222_09LTM | 1   | Cliona Celata                        | 1         |
| Lower    | 2009 | 222_09LTM | 2   | Eteone Heteropoda                    | 3         |
| Lower    | 2009 | 222_09LTM | 1   | Glycera Americana                    | 1         |
| Lower    | 2009 | 222_09LTM | 2   | Ilyanassa Obsoleta                   | 1         |
| Lower    | 2009 | 222_09LTM | 1   | Leitoscoloplos Fragilis              | 55        |
| Lower    | 2009 | 222_09LTM | 2   | Leitoscoloplos Fragilis              | 140       |
| Lower    | 2009 | 222_09LTM | 1   | Leitoscoloplos Sp.                   | 104       |
| Lower    | 2009 | 222_09LTM | 2   | Leitoscoloplos Sp.                   | 167       |
| Lower    | 2009 | 222_09LTM | 1   | Mediomastus Ambiseta                 | 2         |
| Lower    | 2009 | 222_09LTM | 2   | Mediomastus Ambiseta                 | 12        |
| Lower    | 2009 | 222_09LTM | 1   | Mercenaria Mercenaria                | 4         |
| Lower    | 2009 | 222_09LTM | 2   | Mercenaria Mercenaria                | 9         |
| Lower    | 2009 | 222_09LTM | 2   | Mitrella Lunata                      | 1         |
| Lower    | 2009 | 222_09LTM | 1   | Mulinia Lateralis                    | 3         |
| Lower    | 2009 | 222_09LTM | 2   | Mulinia Lateralis                    | 3         |
| Lower    | 2009 | 222_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 222_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 222_09LTM | 1   | Oligochaeta                          | 45        |
| Lower    | 2009 | 222_09LTM | 2   | Oligochaeta                          | 57        |
| Lower    | 2009 | 222_09LTM | 1   | Pectinaria Gouldi                    | 2         |
| Lower    | 2009 | 222_09LTM | 1   | Podarke Obscura                      | 4         |
| Lower    | 2009 | 222_09LTM | 2   | Podarke Obscura                      | 5         |
| Lower    | 2009 | 222_09LTM | 1   | Polydora Cornuta                     | 40        |
| Lower    | 2009 | 222_09LTM | 2   | Polydora Cornuta                     | 48        |
| Lower    | 2009 | 222_09LTM | 1   | Streblospio Benedicti                | 27        |
| Lower    | 2009 | 222_09LTM | 2   | Streblospio Benedicti                | 78        |
| Lower    | 2009 | 222_09LTM | 1   | Tharyx Acutus                        | 4         |
| Lower    | 2009 | 222_09LTM | 2   | Tharyx Acutus                        | 10        |
| Lower    | 2009 | 224_09LTM | 1   | Ampelisca Abdita                     | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Capitella Capitata                   | 2         |
| Lower    | 2009 | 224_09LTM | 2   | Cirratulidae                         | 4         |
| Lower    | 2009 | 224_09LTM | 2   | Dodecaceria Coralii                  | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Dorvillea (Schistomeringos) Annulata | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Gyptis Vittata                       | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Halecium Sp.                         | P         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Lower    | 2009 | 224_09LTM | 1   | Leitoscoloplos Fragilis              | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Leitoscoloplos Fragilis              | 1         |
| Lower    | 2009 | 224_09LTM | 1   | Leitoscoloplos Sp.                   | 2         |
| Lower    | 2009 | 224_09LTM | 2   | Leitoscoloplos Sp.                   | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Littorina Littorea                   | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Mediomastus Ambiseta                 | 3         |
| Lower    | 2009 | 224_09LTM | 1   | Microdeutopus Gryllotalpa            | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Molgula Sp.                          | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Neanthes Arenaceodentata             | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Neanthes Succinea                    | 2         |
| Lower    | 2009 | 224_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 224_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 224_09LTM | 1   | Oligochaeta                          | 10        |
| Lower    | 2009 | 224_09LTM | 2   | Oligochaeta                          | 21        |
| Lower    | 2009 | 224_09LTM | 2   | Pectinaria Gouldi                    | 2         |
| Lower    | 2009 | 224_09LTM | 1   | Petricola Pholadiformis              | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Podarke Obscura                      | 6         |
| Lower    | 2009 | 224_09LTM | 2   | Polydora Cornuta                     | 2         |
| Lower    | 2009 | 224_09LTM | 2   | Prionospio (Minuspio) Perkinsi       | 1         |
| Lower    | 2009 | 224_09LTM | 2   | Schizoporella Unicornis              | P         |
| Lower    | 2009 | 224_09LTM | 1   | Streblospio Benedicti                | 20        |
| Lower    | 2009 | 224_09LTM | 2   | Streblospio Benedicti                | 25        |
| Lower    | 2009 | 224_09LTM | 1   | Tharyx Acutus                        | 3         |
| Lower    | 2009 | 224_09LTM | 2   | Tharyx Acutus                        | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Ampelisca Abdita                     | 5         |
| Lower    | 2009 | 225_09LTM | 2   | Ampelisca Abdita                     | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Anomia Simplex                       | 10        |
| Lower    | 2009 | 225_09LTM | 2   | Anomia Simplex                       | 3         |
| Lower    | 2009 | 225_09LTM | 2   | Anomia Sp.                           | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Ascidacea                            | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Boccardiella Hamata                  | 2         |
| Lower    | 2009 | 225_09LTM | 1   | Bowerbankia Sp.                      | P         |
| Lower    | 2009 | 225_09LTM | 2   | Capitella Capitata                   | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Cirratulidae                         | 5         |
| Lower    | 2009 | 225_09LTM | 2   | Cirratulidae                         | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Crepidula Fornicata                  | 2         |
| Lower    | 2009 | 225_09LTM | 1   | Dipolydora Socialis                  | 31        |
| Lower    | 2009 | 225_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 4         |
| Lower    | 2009 | 225_09LTM | 1   | Dyspanopeus Sayi                     | 1         |
| Lower    | 2009 | 225_09LTM | 2   | Edwardsia Elegans                    | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Eteone Heteropoda                    | 3         |
| Lower    | 2009 | 225_09LTM | 2   | Eteone Heteropoda                    | 2         |
| Lower    | 2009 | 225_09LTM | 1   | Eumida Sanguinea                     | 2         |
| Lower    | 2009 | 225_09LTM | 2   | Eumida Sanguinea                     | 1         |
| Lower    | 2009 | 225_09LTM | 2   | Glycera Americana                    | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Glycinde Solitaria                   | 2         |
| Lower    | 2009 | 225_09LTM | 1   | Gyptis Vittata                       | 1         |
| Lower    | 2009 | 225_09LTM | 2   | Gyptis Vittata                       | 6         |
| Lower    | 2009 | 225_09LTM | 1   | Halecium Sp.                         | P         |
| Lower    | 2009 | 225_09LTM | 2   | Halecium Sp.                         | P         |
| Lower    | 2009 | 225_09LTM | 1   | Harpacticoida                        | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Heteromastus Filiformis              | 3         |
| Lower    | 2009 | 225_09LTM | 1   | Ilyanassa Trivittata                 | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Leitoscoloplos Sp.                   | 2         |
| Lower    | 2009 | 225_09LTM | 2   | Leitoscoloplos Sp.                   | 3         |
| Lower    | 2009 | 225_09LTM | 1   | Luconacia Incerta                    | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Macoma Tenta                         | 32        |
| Lower    | 2009 | 225_09LTM | 2   | Macoma Tenta                         | 62        |
| Lower    | 2009 | 225_09LTM | 1   | Mediomastus Ambiseta                 | 138       |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Lower    | 2009 | 225_09LTM | 2   | Mediomastus Ambiseta           | 34        |
| Lower    | 2009 | 225_09LTM | 2   | Mercenaria Mercenaria          | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Microdeutopus Gryllotalpa      | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Mitrella Lunata                | 1         |
| Lower    | 2009 | 225_09LTM | 2   | Mitrella Lunata                | 9         |
| Lower    | 2009 | 225_09LTM | 1   | Mulinia Lateralis              | 12        |
| Lower    | 2009 | 225_09LTM | 2   | Mulinia Lateralis              | 40        |
| Lower    | 2009 | 225_09LTM | 1   | Neanthes Succinea              | 6         |
| Lower    | 2009 | 225_09LTM | 2   | Neanthes Succinea              | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 225_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 225_09LTM | 1   | Odontosyllis Fulgurans         | 3         |
| Lower    | 2009 | 225_09LTM | 1   | Oligochaeta                    | 19        |
| Lower    | 2009 | 225_09LTM | 2   | Oligochaeta                    | 11        |
| Lower    | 2009 | 225_09LTM | 1   | Oxyurostylis Smithi            | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Paracaprella Tenuis            | 7         |
| Lower    | 2009 | 225_09LTM | 1   | Pectinaria Gouldi              | 13        |
| Lower    | 2009 | 225_09LTM | 2   | Pectinaria Gouldi              | 13        |
| Lower    | 2009 | 225_09LTM | 1   | Pentamera Calcigera            | 1         |
| Lower    | 2009 | 225_09LTM | 2   | Petricola Pholadiformis        | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Phyllodoce Arenae              | 1         |
| Lower    | 2009 | 225_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Podarke Obscura                | 29        |
| Lower    | 2009 | 225_09LTM | 2   | Podarke Obscura                | 23        |
| Lower    | 2009 | 225_09LTM | 1   | Polydora Cornuta               | 9         |
| Lower    | 2009 | 225_09LTM | 2   | Polydora Cornuta               | 2         |
| Lower    | 2009 | 225_09LTM | 2   | Potamilla Reniformis           | 1         |
| Lower    | 2009 | 225_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 6         |
| Lower    | 2009 | 225_09LTM | 2   | Rictaxis Punctostriatus        | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Sabellaria Vulgaris            | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Seila Adamsi                   | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Streblospio Benedicti          | 40        |
| Lower    | 2009 | 225_09LTM | 2   | Streblospio Benedicti          | 17        |
| Lower    | 2009 | 225_09LTM | 2   | Stylochus Ellipticus           | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Tellina Agilis                 | 1         |
| Lower    | 2009 | 225_09LTM | 1   | Tellinidae                     | 6         |
| Lower    | 2009 | 225_09LTM | 2   | Tellinidae                     | 7         |
| Lower    | 2009 | 225_09LTM | 1   | Tharyx Acutus                  | 33        |
| Lower    | 2009 | 225_09LTM | 2   | Tharyx Acutus                  | 32        |
| Lower    | 2009 | 225_09LTM | 1   | Zygonemertes Virescens         | 1         |
| Lower    | 2009 | 226_09LTM | 1   | Capitella Capitata             | 2         |
| Lower    | 2009 | 226_09LTM | 2   | Capitella Capitata             | 1         |
| Lower    | 2009 | 226_09LTM | 1   | Mediomastus Ambiseta           | 8         |
| Lower    | 2009 | 226_09LTM | 2   | Mediomastus Ambiseta           | 1         |
| Lower    | 2009 | 226_09LTM | 2   | Microdeutopus Gryllotalpa      | 1         |
| Lower    | 2009 | 226_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 226_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 226_09LTM | 1   | Oligochaeta                    | 2         |
| Lower    | 2009 | 226_09LTM | 2   | Oligochaeta                    | 1         |
| Lower    | 2009 | 226_09LTM | 1   | Streblospio Benedicti          | 3         |
| Lower    | 2009 | 226_09LTM | 2   | Streblospio Benedicti          | 2         |
| Lower    | 2009 | 226_09LTM | 1   | Tharyx Acutus                  | 2         |
| Lower    | 2009 | 227_09LTM | 1   | Ampelisca Abdita               | 1         |
| Lower    | 2009 | 227_09LTM | 2   | Ampelisca Abdita               | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Anomia Simplex                 | 2         |
| Lower    | 2009 | 227_09LTM | 2   | Anomia Simplex                 | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Capitella Capitata             | 197       |
| Lower    | 2009 | 227_09LTM | 2   | Capitella Capitata             | 231       |
| Lower    | 2009 | 227_09LTM | 1   | Capitella Jonesi               | 6         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Lower    | 2009 | 227_09LTM | 2   | Capitella Jonesi                     | 9         |
| Lower    | 2009 | 227_09LTM | 1   | Crepidula Fornicata                  | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Dyspanopeus Sayi                     | 3         |
| Lower    | 2009 | 227_09LTM | 2   | Eteone Heteropoda                    | 1         |
| Lower    | 2009 | 227_09LTM | 2   | Gyptis Vittata                       | 2         |
| Lower    | 2009 | 227_09LTM | 1   | Heteromastus Filiformis              | 8         |
| Lower    | 2009 | 227_09LTM | 2   | Heteromastus Filiformis              | 2         |
| Lower    | 2009 | 227_09LTM | 2   | Leitoscoloplos Fragilis              | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Leitoscoloplos Sp.                   | 5         |
| Lower    | 2009 | 227_09LTM | 2   | Leitoscoloplos Sp.                   | 2         |
| Lower    | 2009 | 227_09LTM | 1   | Mediomastus Ambiseta                 | 2         |
| Lower    | 2009 | 227_09LTM | 2   | Mediomastus Ambiseta                 | 15        |
| Lower    | 2009 | 227_09LTM | 1   | Mercenaria Mercenaria                | 2         |
| Lower    | 2009 | 227_09LTM | 2   | Mercenaria Mercenaria                | 2         |
| Lower    | 2009 | 227_09LTM | 1   | Microdeutopus Gryllotalpa            | 5         |
| Lower    | 2009 | 227_09LTM | 2   | Microdeutopus Gryllotalpa            | 3         |
| Lower    | 2009 | 227_09LTM | 1   | Mitrella Lunata                      | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Mulinia Lateralis                    | 1         |
| Lower    | 2009 | 227_09LTM | 2   | Mulinia Lateralis                    | 5         |
| Lower    | 2009 | 227_09LTM | 1   | Neanthes Succinea                    | 3         |
| Lower    | 2009 | 227_09LTM | 2   | Neanthes Succinea                    | 3         |
| Lower    | 2009 | 227_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 227_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 227_09LTM | 1   | Oligochaeta                          | 23        |
| Lower    | 2009 | 227_09LTM | 2   | Oligochaeta                          | 15        |
| Lower    | 2009 | 227_09LTM | 1   | Pectinaria Gouldi                    | 3         |
| Lower    | 2009 | 227_09LTM | 2   | Pectinaria Gouldi                    | 3         |
| Lower    | 2009 | 227_09LTM | 2   | Platynereis Dumerilii                | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Podarke Obscura                      | 2         |
| Lower    | 2009 | 227_09LTM | 2   | Podarke Obscura                      | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Polydora Cornuta                     | 38        |
| Lower    | 2009 | 227_09LTM | 2   | Polydora Cornuta                     | 43        |
| Lower    | 2009 | 227_09LTM | 2   | Prionospio Heterobranchia            | 1         |
| Lower    | 2009 | 227_09LTM | 1   | Streblospio Benedicti                | 27        |
| Lower    | 2009 | 227_09LTM | 2   | Streblospio Benedicti                | 21        |
| Lower    | 2009 | 227_09LTM | 1   | Tharyx Acutus                        | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Acteocina Canaliculata               | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Ampelisca Abdita                     | 2         |
| Lower    | 2009 | 230_09LTM | 2   | Ampelisca Abdita                     | 2         |
| Lower    | 2009 | 230_09LTM | 1   | Anomia Simplex                       | 5         |
| Lower    | 2009 | 230_09LTM | 2   | Anomia Simplex                       | 1         |
| Lower    | 2009 | 230_09LTM | 2   | Callinectes Sapidus                  | 3         |
| Lower    | 2009 | 230_09LTM | 1   | Capitella Capitata                   | 1         |
| Lower    | 2009 | 230_09LTM | 2   | Capitella Capitata                   | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Caulleriella Sp.                     | 5         |
| Lower    | 2009 | 230_09LTM | 1   | Cirratulidae                         | 65        |
| Lower    | 2009 | 230_09LTM | 2   | Cirratulidae                         | 142       |
| Lower    | 2009 | 230_09LTM | 2   | Dipolydora Socialis                  | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Dyspanopeus Sayi                     | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Edwardsia Elegans                    | 1         |
| Lower    | 2009 | 230_09LTM | 2   | Edwardsia Elegans                    | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Eteone Heteropoda                    | 4         |
| Lower    | 2009 | 230_09LTM | 2   | Eteone Heteropoda                    | 6         |
| Lower    | 2009 | 230_09LTM | 2   | Eumida Sanguinea                     | 3         |
| Lower    | 2009 | 230_09LTM | 1   | Glycera Americana                    | 1         |
| Lower    | 2009 | 230_09LTM | 2   | Glycinde Solitaria                   | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Gyptis Vittata                       | 2         |
| Lower    | 2009 | 230_09LTM | 2   | Gyptis Vittata                       | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Lower    | 2009 | 230_09LTM | 2   | Leitoscoloplos Sp.             | 1         |
| Lower    | 2009 | 230_09LTM | 2   | Lovenella Gracilis             | P         |
| Lower    | 2009 | 230_09LTM | 1   | Macoma Tenta                   | 20        |
| Lower    | 2009 | 230_09LTM | 2   | Macoma Tenta                   | 8         |
| Lower    | 2009 | 230_09LTM | 1   | Mediomastus Ambiseta           | 129       |
| Lower    | 2009 | 230_09LTM | 2   | Mediomastus Ambiseta           | 247       |
| Lower    | 2009 | 230_09LTM | 2   | Melinna Cristata               | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Mercenaria Mercenaria          | 3         |
| Lower    | 2009 | 230_09LTM | 2   | Mercenaria Mercenaria          | 2         |
| Lower    | 2009 | 230_09LTM | 2   | Microdeutopus Gryllotalpa      | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Mulinia Lateralis              | 4         |
| Lower    | 2009 | 230_09LTM | 2   | Mulinia Lateralis              | 1         |
| Lower    | 2009 | 230_09LTM | 2   | Neanthes Succinea              | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 230_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 230_09LTM | 1   | Odontosyllis Fulgurans         | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Oligochaeta                    | 5         |
| Lower    | 2009 | 230_09LTM | 2   | Oligochaeta                    | 6         |
| Lower    | 2009 | 230_09LTM | 2   | Paracaprella Tenuis            | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Pectinaria Gouldi              | 17        |
| Lower    | 2009 | 230_09LTM | 2   | Pectinaria Gouldi              | 4         |
| Lower    | 2009 | 230_09LTM | 1   | Petricola Pholadiformis        | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Phyllodoce Arenae              | 4         |
| Lower    | 2009 | 230_09LTM | 2   | Phyllodoce Arenae              | 1         |
| Lower    | 2009 | 230_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Lower    | 2009 | 230_09LTM | 1   | Podarke Obscura                | 7         |
| Lower    | 2009 | 230_09LTM | 2   | Podarke Obscura                | 2         |
| Lower    | 2009 | 230_09LTM | 1   | Polydora Cornuta               | 5         |
| Lower    | 2009 | 230_09LTM | 2   | Polydora Cornuta               | 11        |
| Lower    | 2009 | 230_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 10        |
| Lower    | 2009 | 230_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 2         |
| Lower    | 2009 | 230_09LTM | 1   | Rictaxis Punctostriatus        | 4         |
| Lower    | 2009 | 230_09LTM | 1   | Streblospio Benedicti          | 76        |
| Lower    | 2009 | 230_09LTM | 2   | Streblospio Benedicti          | 152       |
| Lower    | 2009 | 230_09LTM | 1   | Tellina Agilis                 | 2         |
| Lower    | 2009 | 230_09LTM | 1   | Tharyx Acutus                  | 105       |
| Lower    | 2009 | 230_09LTM | 2   | Tharyx Acutus                  | 139       |
| Lower    | 2009 | 231_09LTM | 2   | Leitoscoloplos Sp.             | 1         |
| Lower    | 2009 | 231_09LTM | 1   | Mediomastus Ambiseta           | 4         |
| Lower    | 2009 | 231_09LTM | 2   | Mulinia Lateralis              | 1         |
| Lower    | 2009 | 231_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 231_09LTM | 1   | Oligochaeta                    | 1         |
| Lower    | 2009 | 231_09LTM | 1   | Streblospio Benedicti          | 3         |
| Lower    | 2009 | 231_09LTM | 2   | Streblospio Benedicti          | 4         |
| Lower    | 2009 | 231_09LTM | 2   | Tellina Agilis                 | 1         |
| Lower    | 2009 | 231_09LTM | 1   | Tharyx Acutus                  | 3         |
| Lower    | 2009 | 231_09LTM | 2   | Tharyx Acutus                  | 5         |
| Lower    | 2009 | 235_09LTM | 1   | Acteocina Canaliculata         | 4         |
| Lower    | 2009 | 235_09LTM | 2   | Cerebratulus Lacteus           | 1         |
| Lower    | 2009 | 235_09LTM | 1   | Crepidula Fornicata            | 1         |
| Lower    | 2009 | 235_09LTM | 2   | Gyptis Vittata                 | 9         |
| Lower    | 2009 | 235_09LTM | 1   | Hemicyclops Sp.                | 1         |
| Lower    | 2009 | 235_09LTM | 1   | Leitoscoloplos Fragilis        | 1         |
| Lower    | 2009 | 235_09LTM | 2   | Leitoscoloplos Fragilis        | 1         |
| Lower    | 2009 | 235_09LTM | 1   | Leitoscoloplos Sp.             | 8         |
| Lower    | 2009 | 235_09LTM | 2   | Leitoscoloplos Sp.             | 9         |
| Lower    | 2009 | 235_09LTM | 2   | Macoma Tenta                   | 4         |
| Lower    | 2009 | 235_09LTM | 1   | Mediomastus Ambiseta           | 3         |
| Lower    | 2009 | 235_09LTM | 2   | Mediomastus Ambiseta           | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Lower    | 2009 | 235_09LTM | 1   | Mulinia Lateralis                    | 4         |
| Lower    | 2009 | 235_09LTM | 2   | Mulinia Lateralis                    | 10        |
| Lower    | 2009 | 235_09LTM | 2   | Neanthes Succinea                    | 1         |
| Lower    | 2009 | 235_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 235_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 235_09LTM | 1   | Oligochaeta                          | 2         |
| Lower    | 2009 | 235_09LTM | 2   | Podarke Obscura                      | 2         |
| Lower    | 2009 | 235_09LTM | 2   | Prionospio (Minuspio) Perkinsi       | 4         |
| Lower    | 2009 | 235_09LTM | 1   | Streblospio Benedicti                | 4         |
| Lower    | 2009 | 235_09LTM | 2   | Streblospio Benedicti                | 1         |
| Lower    | 2009 | 235_09LTM | 1   | Tellina Agilis                       | 1         |
| Lower    | 2009 | 235_09LTM | 1   | Tharyx Acutus                        | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Ampelisca Abdita                     | 12        |
| Lower    | 2009 | 236_09LTM | 2   | Ampelisca Abdita                     | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Ampharete Finmarchica                | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Anadara Transversa                   | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Boccardiella Hamata                  | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Boreotrophon Clathratus              | 1         |
| Lower    | 2009 | 236_09LTM | 2   | Boreotrophon Clathratus              | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Busycon Canaliculatum                | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Cliona Celata                        | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Dipolydora Socialis                  | 8         |
| Lower    | 2009 | 236_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Dyspanopeus Sayi                     | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Eteone Heteropoda                    | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Eumida Sanguinea                     | 4         |
| Lower    | 2009 | 236_09LTM | 1   | Glycera Americana                    | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Glycinde Solitaria                   | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Harpacticoida                        | 3         |
| Lower    | 2009 | 236_09LTM | 1   | Leitoscoloplos Sp.                   | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Leptinogaster Major                  | 2         |
| Lower    | 2009 | 236_09LTM | 1   | Leucon Americanus                    | 3         |
| Lower    | 2009 | 236_09LTM | 1   | Macoma Tenta                         | 45        |
| Lower    | 2009 | 236_09LTM | 2   | Macoma Tenta                         | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Mediomastus Ambiseta                 | 194       |
| Lower    | 2009 | 236_09LTM | 1   | Mercenaria Mercenaria                | 11        |
| Lower    | 2009 | 236_09LTM | 2   | Mercenaria Mercenaria                | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Mulinia Lateralis                    | 11        |
| Lower    | 2009 | 236_09LTM | 2   | Mulinia Lateralis                    | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 236_09LTM | 1   | Nereidae                             | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Nucula Proxima                       | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Oligochaeta                          | 18        |
| Lower    | 2009 | 236_09LTM | 2   | Oligochaeta                          | 2         |
| Lower    | 2009 | 236_09LTM | 1   | Pectinaria Gouldi                    | 27        |
| Lower    | 2009 | 236_09LTM | 1   | Petricola Pholadiformis              | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Pitar Morrhuanus                     | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Podarke Obscura                      | 7         |
| Lower    | 2009 | 236_09LTM | 1   | Polydora Cornuta                     | 2         |
| Lower    | 2009 | 236_09LTM | 1   | Polydora Sp.                         | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Prionospio (Minuspio) Perkinsi       | 4         |
| Lower    | 2009 | 236_09LTM | 1   | Sabellaria Vulgaris                  | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Streblospio Benedicti                | 68        |
| Lower    | 2009 | 236_09LTM | 2   | Streblospio Benedicti                | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Tellina Agilis                       | 3         |
| Lower    | 2009 | 236_09LTM | 1   | Tellinidae                           | 4         |
| Lower    | 2009 | 236_09LTM | 1   | Tharyx Acutus                        | 13        |
| Lower    | 2009 | 236_09LTM | 2   | Tharyx Acutus                        | 1         |
| Lower    | 2009 | 236_09LTM | 1   | Turbellaria                          | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Lower    | 2009 | 237_09LTM | 1   | Anomia Simplex                       | 8         |
| Lower    | 2009 | 237_09LTM | 1   | Anomia Simplex                       | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Balanus Venustus                     | 3         |
| Lower    | 2009 | 237_09LTM | 1   | Boccardiella Hamata                  | 1         |
| Lower    | 2009 | 237_09LTM | 2   | Boccardiella Hamata                  | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Capitella Capitata                   | 6         |
| Lower    | 2009 | 237_09LTM | 2   | Capitella Capitata                   | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Cirratulidae                         | 64        |
| Lower    | 2009 | 237_09LTM | 2   | Cirratulidae                         | 292       |
| Lower    | 2009 | 237_09LTM | 1   | Crepidula Fornicata                  | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Crepidula Plana                      | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 1         |
| Lower    | 2009 | 237_09LTM | 2   | Dorvillea (Schistomeringos) Annulata | 1         |
| Lower    | 2009 | 237_09LTM | 2   | Drilonereis Longa                    | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Edwardsia Elegans                    | 3         |
| Lower    | 2009 | 237_09LTM | 1   | Eteone Heteropoda                    | 3         |
| Lower    | 2009 | 237_09LTM | 2   | Eteone Heteropoda                    | 4         |
| Lower    | 2009 | 237_09LTM | 2   | Eumida Sanguinea                     | 4         |
| Lower    | 2009 | 237_09LTM | 2   | Glycera Americana                    | 4         |
| Lower    | 2009 | 237_09LTM | 2   | Glycera Dibranchiata                 | 1         |
| Lower    | 2009 | 237_09LTM | 2   | Glycera Sp.                          | 2         |
| Lower    | 2009 | 237_09LTM | 1   | Heteromastus Filiformis              | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Leitoscoloplos Fragilis              | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Leitoscoloplos Sp.                   | 1         |
| Lower    | 2009 | 237_09LTM | 2   | Macoma Tenta                         | 2         |
| Lower    | 2009 | 237_09LTM | 1   | Mediomastus Ambiseta                 | 7         |
| Lower    | 2009 | 237_09LTM | 2   | Mediomastus Ambiseta                 | 15        |
| Lower    | 2009 | 237_09LTM | 1   | Mercenaria Mercenaria                | 2         |
| Lower    | 2009 | 237_09LTM | 2   | Mercenaria Mercenaria                | 3         |
| Lower    | 2009 | 237_09LTM | 1   | Microdeutopus Gryllotalpa            | 1         |
| Lower    | 2009 | 237_09LTM | 2   | Microdeutopus Gryllotalpa            | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Mulinia Lateralis                    | 1         |
| Lower    | 2009 | 237_09LTM | 2   | Mulinia Lateralis                    | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Nematoda                             | P         |
| Lower    | 2009 | 237_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 237_09LTM | 1   | Nucula Annulata                      | 2         |
| Lower    | 2009 | 237_09LTM | 1   | Oligochaeta                          | 17        |
| Lower    | 2009 | 237_09LTM | 2   | Oligochaeta                          | 7         |
| Lower    | 2009 | 237_09LTM | 1   | Ophiuroidea                          | 3         |
| Lower    | 2009 | 237_09LTM | 1   | Pectinaria Gouldi                    | 11        |
| Lower    | 2009 | 237_09LTM | 2   | Pectinaria Gouldi                    | 2         |
| Lower    | 2009 | 237_09LTM | 1   | Podarke Obscura                      | 3         |
| Lower    | 2009 | 237_09LTM | 2   | Podarke Obscura                      | 3         |
| Lower    | 2009 | 237_09LTM | 1   | Polydora Cornuta                     | 20        |
| Lower    | 2009 | 237_09LTM | 1   | Prionospio Heterobranchia            | 15        |
| Lower    | 2009 | 237_09LTM | 2   | Prionospio Heterobranchia            | 20        |
| Lower    | 2009 | 237_09LTM | 1   | Streblospio Benedicti                | 93        |
| Lower    | 2009 | 237_09LTM | 2   | Streblospio Benedicti                | 137       |
| Lower    | 2009 | 237_09LTM | 2   | Streblospio Benedicti                | 1         |
| Lower    | 2009 | 237_09LTM | 1   | Tharyx Acutus                        | 17        |
| Lower    | 2009 | 237_09LTM | 2   | Tharyx Acutus                        | 44        |
| Lower    | 2009 | 240_09LTM | 1   | Cirratulidae                         | 1         |
| Lower    | 2009 | 240_09LTM | 1   | Mediomastus Ambiseta                 | 1         |
| Lower    | 2009 | 240_09LTM | 2   | Nematoda                             | P         |
| Lower    | 2009 | 240_09LTM | 1   | Streblospio Benedicti                | 6         |
| Lower    | 2009 | 240_09LTM | 2   | Streblospio Benedicti                | 1         |
| Lower    | 2009 | 240_09LTM | 1   | Tharyx Acutus                        | 2         |
| Lower    | 2009 | 241_09LTM | 2   | Aeverrillia Setigera                 | P         |
| Lower    | 2009 | 241_09LTM | 1   | Ampelisca Abdita                     | 21        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Lower    | 2009 | 241_09LTM | 2   | Ampelisca Abdita               | 46        |
| Lower    | 2009 | 241_09LTM | 2   | Ampelisca Vadorum              | 1         |
| Lower    | 2009 | 241_09LTM | 1   | Cirratulidae                   | 1         |
| Lower    | 2009 | 241_09LTM | 2   | Drilonereis Longa              | 1         |
| Lower    | 2009 | 241_09LTM | 1   | Eteone Heteropoda              | 1         |
| Lower    | 2009 | 241_09LTM | 2   | Eteone Heteropoda              | 3         |
| Lower    | 2009 | 241_09LTM | 1   | Gyptis Vittata                 | 1         |
| Lower    | 2009 | 241_09LTM | 2   | Gyptis Vittata                 | 1         |
| Lower    | 2009 | 241_09LTM | 2   | Halecium Sp.                   | P         |
| Lower    | 2009 | 241_09LTM | 2   | Harpacticoida                  | 3         |
| Lower    | 2009 | 241_09LTM | 1   | Ianiropsis Sp. 1               | 1         |
| Lower    | 2009 | 241_09LTM | 1   | Leucon Americanus              | 2         |
| Lower    | 2009 | 241_09LTM | 2   | Leucon Americanus              | 8         |
| Lower    | 2009 | 241_09LTM | 1   | Macoma Tenta                   | 18        |
| Lower    | 2009 | 241_09LTM | 2   | Macoma Tenta                   | 39        |
| Lower    | 2009 | 241_09LTM | 1   | Mediomastus Ambiseta           | 81        |
| Lower    | 2009 | 241_09LTM | 2   | Mediomastus Ambiseta           | 98        |
| Lower    | 2009 | 241_09LTM | 1   | Mulinia Lateralis              | 1         |
| Lower    | 2009 | 241_09LTM | 2   | Mulinia Lateralis              | 17        |
| Lower    | 2009 | 241_09LTM | 2   | Neanthes Succinea              | 2         |
| Lower    | 2009 | 241_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 241_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 241_09LTM | 2   | Nephtys Incisa                 | 1         |
| Lower    | 2009 | 241_09LTM | 1   | Oligochaeta                    | 3         |
| Lower    | 2009 | 241_09LTM | 2   | Oligochaeta                    | 1         |
| Lower    | 2009 | 241_09LTM | 1   | Pectinaria Gouldi              | 2         |
| Lower    | 2009 | 241_09LTM | 2   | Pectinaria Gouldi              | 14        |
| Lower    | 2009 | 241_09LTM | 2   | Podarke Obscura                | 1         |
| Lower    | 2009 | 241_09LTM | 1   | Polydora Cornuta               | 2         |
| Lower    | 2009 | 241_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 9         |
| Lower    | 2009 | 241_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 6         |
| Lower    | 2009 | 241_09LTM | 2   | Spiochaetopterus Oculatus      | 3         |
| Lower    | 2009 | 241_09LTM | 1   | Streblospio Benedicti          | 49        |
| Lower    | 2009 | 241_09LTM | 2   | Streblospio Benedicti          | 69        |
| Lower    | 2009 | 241_09LTM | 1   | Stylochus Ellipticus           | 4         |
| Lower    | 2009 | 241_09LTM | 1   | Tagelus Divisus                | 1         |
| Lower    | 2009 | 241_09LTM | 2   | Tellina Agilis                 | 7         |
| Lower    | 2009 | 241_09LTM | 2   | Tubulanus Sp.                  | 1         |
| Lower    | 2009 | 241_09LTM | 2   | Turbonilla Elegantula          | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Ampelisca Abdita               | 88        |
| Lower    | 2009 | 242_09LTM | 2   | Ampelisca Abdita               | 89        |
| Lower    | 2009 | 242_09LTM | 1   | Anadara Transversa             | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Anomia Simplex                 | 2         |
| Lower    | 2009 | 242_09LTM | 1   | Capitella Capitata             | 5         |
| Lower    | 2009 | 242_09LTM | 2   | Capitella Capitata             | 4         |
| Lower    | 2009 | 242_09LTM | 1   | Cirratulidae                   | 4         |
| Lower    | 2009 | 242_09LTM | 2   | Cirratulidae                   | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Crepidula Fornicata            | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Dipolydora Socialis            | 1         |
| Lower    | 2009 | 242_09LTM | 2   | Eteone Heteropoda              | 1         |
| Lower    | 2009 | 242_09LTM | 2   | Eumida Sanguinea               | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Glycera Americana              | 1         |
| Lower    | 2009 | 242_09LTM | 2   | Glycinde Solitaria             | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Harpacticoida                  | 1         |
| Lower    | 2009 | 242_09LTM | 2   | Heteromastus Filiformis        | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Leptinogaster Major            | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Leucon Americanus              | 2         |
| Lower    | 2009 | 242_09LTM | 1   | Macoma Tenta                   | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Mediomastus Ambiseta           | 21        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Lower    | 2009 | 242_09LTM | 2   | Mediomastus Ambiseta           | 7         |
| Lower    | 2009 | 242_09LTM | 1   | Mercenaria Mercenaria          | 2         |
| Lower    | 2009 | 242_09LTM | 2   | Mercenaria Mercenaria          | 3         |
| Lower    | 2009 | 242_09LTM | 1   | Microdeutopus Gryllotalpa      | 1         |
| Lower    | 2009 | 242_09LTM | 2   | Microdeutopus Gryllotalpa      | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Microprotopus Raneyi           | 12        |
| Lower    | 2009 | 242_09LTM | 2   | Microprotopus Raneyi           | 3         |
| Lower    | 2009 | 242_09LTM | 1   | Mitrella Lunata                | 2         |
| Lower    | 2009 | 242_09LTM | 1   | Monocorophium Acherusicum      | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Mulinia Lateralis              | 35        |
| Lower    | 2009 | 242_09LTM | 2   | Mulinia Lateralis              | 160       |
| Lower    | 2009 | 242_09LTM | 1   | Neanthes Succinea              | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 242_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 242_09LTM | 1   | Oligochaeta                    | 7         |
| Lower    | 2009 | 242_09LTM | 2   | Oligochaeta                    | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Paranaitis Speciosa            | 2         |
| Lower    | 2009 | 242_09LTM | 1   | Pectinaria Gouldi              | 4         |
| Lower    | 2009 | 242_09LTM | 2   | Pectinaria Gouldi              | 10        |
| Lower    | 2009 | 242_09LTM | 1   | Phyllodoce Arenae              | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Podarke Obscura                | 2         |
| Lower    | 2009 | 242_09LTM | 1   | Polydora Cornuta               | 3         |
| Lower    | 2009 | 242_09LTM | 1   | Prionospio Heterobranchia      | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Streblospio Benedicti          | 38        |
| Lower    | 2009 | 242_09LTM | 2   | Streblospio Benedicti          | 7         |
| Lower    | 2009 | 242_09LTM | 1   | Tellina Agilis                 | 3         |
| Lower    | 2009 | 242_09LTM | 1   | Tellinidae                     | 1         |
| Lower    | 2009 | 242_09LTM | 1   | Tharyx Acutus                  | 19        |
| Lower    | 2009 | 245_09LTM | 1   | Ampelisca Abdita               | 1         |
| Lower    | 2009 | 245_09LTM | 2   | Ampelisca Abdita               | 7         |
| Lower    | 2009 | 245_09LTM | 2   | Anomia Simplex                 | 1         |
| Lower    | 2009 | 245_09LTM | 2   | Balanus Venustus               | 1         |
| Lower    | 2009 | 245_09LTM | 1   | Capitella Capitata             | 8         |
| Lower    | 2009 | 245_09LTM | 2   | Capitella Capitata             | 51        |
| Lower    | 2009 | 245_09LTM | 2   | Capitella Jonesi               | 1         |
| Lower    | 2009 | 245_09LTM | 2   | Crepidula Fornicata            | 7         |
| Lower    | 2009 | 245_09LTM | 2   | Dyspanopeus Sayi               | 2         |
| Lower    | 2009 | 245_09LTM | 2   | Eumida Sanguinea               | 1         |
| Lower    | 2009 | 245_09LTM | 1   | Gemma Gemma                    | 1         |
| Lower    | 2009 | 245_09LTM | 1   | Leitoscoloplos Sp.             | 1         |
| Lower    | 2009 | 245_09LTM | 1   | Mediomastus Ambiseta           | 10        |
| Lower    | 2009 | 245_09LTM | 2   | Mercenaria Mercenaria          | 2         |
| Lower    | 2009 | 245_09LTM | 1   | Microdeutopus Gryllotalpa      | 1         |
| Lower    | 2009 | 245_09LTM | 2   | Microdeutopus Gryllotalpa      | 17        |
| Lower    | 2009 | 245_09LTM | 2   | Mitrella Lunata                | 1         |
| Lower    | 2009 | 245_09LTM | 2   | Monocorophium Acherusicum      | 4         |
| Lower    | 2009 | 245_09LTM | 2   | Mulinia Lateralis              | 3         |
| Lower    | 2009 | 245_09LTM | 2   | Neanthes Succinea              | 2         |
| Lower    | 2009 | 245_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 245_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 245_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Lower    | 2009 | 245_09LTM | 1   | Polydora Cornuta               | 1         |
| Lower    | 2009 | 245_09LTM | 2   | Polydora Cornuta               | 8         |
| Lower    | 2009 | 245_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Lower    | 2009 | 245_09LTM | 1   | Streblospio Benedicti          | 3         |
| Lower    | 2009 | 245_09LTM | 2   | Streblospio Benedicti          | 2         |
| Lower    | 2009 | 247_09LTM | 1   | Ampelisca Abdita               | 2         |
| Lower    | 2009 | 247_09LTM | 2   | Ampelisca Abdita               | 9         |
| Lower    | 2009 | 247_09LTM | 2   | Ampithoe Longimana             | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Lower    | 2009 | 247_09LTM | 2   | Capitella Capitata        | 225       |
| Lower    | 2009 | 247_09LTM | 1   | Capitella Capitata        | 85        |
| Lower    | 2009 | 247_09LTM | 2   | Capitella Jonesi          | 1         |
| Lower    | 2009 | 247_09LTM | 1   | Capitella Jonesi          | 5         |
| Lower    | 2009 | 247_09LTM | 2   | Caprella Penantis         | 1         |
| Lower    | 2009 | 247_09LTM | 2   | Crepidula Plana           | 1         |
| Lower    | 2009 | 247_09LTM | 1   | Eteone Heteropoda         | 1         |
| Lower    | 2009 | 247_09LTM | 2   | Eumida Sanguinea          | 2         |
| Lower    | 2009 | 247_09LTM | 2   | Heteromastus Filiformis   | 2         |
| Lower    | 2009 | 247_09LTM | 2   | Ianiropsis Sp. 1          | 1         |
| Lower    | 2009 | 247_09LTM | 2   | Microdeutopus Anomalus    | 1         |
| Lower    | 2009 | 247_09LTM | 1   | Microdeutopus Gryllotalpa | 5         |
| Lower    | 2009 | 247_09LTM | 2   | Microdeutopus Gryllotalpa | 47        |
| Lower    | 2009 | 247_09LTM | 1   | Microtopus Raneyi         | 2         |
| Lower    | 2009 | 247_09LTM | 2   | Mitrella Lunata           | 8         |
| Lower    | 2009 | 247_09LTM | 2   | Monocorophium Acherusicum | 2         |
| Lower    | 2009 | 247_09LTM | 2   | Neanthes Succinea         | 2         |
| Lower    | 2009 | 247_09LTM | 2   | Nematoda                  | P         |
| Lower    | 2009 | 247_09LTM | 1   | Nematoda                  | P         |
| Lower    | 2009 | 247_09LTM | 2   | Notomastus Latericeus     | 1         |
| Lower    | 2009 | 247_09LTM | 2   | Oligochaeta               | 13        |
| Lower    | 2009 | 247_09LTM | 1   | Oligochaeta               | 2         |
| Lower    | 2009 | 247_09LTM | 2   | Ostracoda                 | 1         |
| Lower    | 2009 | 247_09LTM | 2   | Polydora Cornuta          | 6         |
| Lower    | 2009 | 247_09LTM | 1   | Polydora Cornuta          | 4         |
| Lower    | 2009 | 247_09LTM | 2   | Streblospio Benedicti     | 2         |
| Lower    | 2009 | 249_09LTM | 1   | Capitella Capitata        | 7         |
| Lower    | 2009 | 249_09LTM | 2   | Capitella Capitata        | 11        |
| Lower    | 2009 | 249_09LTM | 1   | Capitella Jonesi          | 3         |
| Lower    | 2009 | 249_09LTM | 1   | Crepidula Fornicata       | 3         |
| Lower    | 2009 | 249_09LTM | 1   | Dyspanopeus Sayi          | 1         |
| Lower    | 2009 | 249_09LTM | 2   | Dyspanopeus Sayi          | 1         |
| Lower    | 2009 | 249_09LTM | 2   | Leitoscoloplos Sp.        | 1         |
| Lower    | 2009 | 249_09LTM | 1   | Mediomastus Ambiseta      | 2         |
| Lower    | 2009 | 249_09LTM | 2   | Mediomastus Ambiseta      | 8         |
| Lower    | 2009 | 249_09LTM | 2   | Mercenaria Mercenaria     | 1         |
| Lower    | 2009 | 249_09LTM | 2   | Microdeutopus Gryllotalpa | 1         |
| Lower    | 2009 | 249_09LTM | 2   | Mitrella Lunata           | 6         |
| Lower    | 2009 | 249_09LTM | 2   | Mulinia Lateralis         | 2         |
| Lower    | 2009 | 249_09LTM | 1   | Nematoda                  | P         |
| Lower    | 2009 | 249_09LTM | 2   | Nematoda                  | P         |
| Lower    | 2009 | 249_09LTM | 1   | Oligochaeta               | 11        |
| Lower    | 2009 | 249_09LTM | 2   | Oligochaeta               | 3         |
| Lower    | 2009 | 249_09LTM | 1   | Palaemonetes Vulgaris     | 1         |
| Lower    | 2009 | 249_09LTM | 1   | Platynereis Dumerilii     | 3         |
| Lower    | 2009 | 249_09LTM | 2   | Platynereis Dumerilii     | 3         |
| Lower    | 2009 | 249_09LTM | 1   | Polydora Cornuta          | 1         |
| Lower    | 2009 | 249_09LTM | 2   | Streblospio Benedicti     | 6         |
| Lower    | 2009 | 250_09LTM | 2   | Ampharete Finmarchica     | 1         |
| Lower    | 2009 | 250_09LTM | 2   | Amphiporus Bioculatus     | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Anachis Lafresnayi        | 17        |
| Lower    | 2009 | 250_09LTM | 2   | Anachis Lafresnayi        | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Anadara Transversa        | 18        |
| Lower    | 2009 | 250_09LTM | 2   | Anadara Transversa        | 11        |
| Lower    | 2009 | 250_09LTM | 2   | Ancistrosyllis Hartmanae  | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Anomia Simplex            | 17        |
| Lower    | 2009 | 250_09LTM | 2   | Anomia Simplex            | 7         |
| Lower    | 2009 | 250_09LTM | 1   | Apocorophium Acutum       | 2         |
| Lower    | 2009 | 250_09LTM | 1   | Autolytus Sp.             | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Lower    | 2009 | 250_09LTM | 2   | Autolytus Sp.                        | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Balanus Sp.                          | 12        |
| Lower    | 2009 | 250_09LTM | 2   | Balanus Venustus                     | 2         |
| Lower    | 2009 | 250_09LTM | 2   | Barentsia Gracilis                   | P         |
| Lower    | 2009 | 250_09LTM | 2   | Bittium Alternatum                   | 1         |
| Lower    | 2009 | 250_09LTM | 2   | Bivalvia                             | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Boccardiella Hamata                  | 13        |
| Lower    | 2009 | 250_09LTM | 2   | Boccardiella Hamata                  | 13        |
| Lower    | 2009 | 250_09LTM | 2   | Boonea Seminuda                      | 3         |
| Lower    | 2009 | 250_09LTM | 2   | Bowerbankia Gracilis                 | P         |
| Lower    | 2009 | 250_09LTM | 1   | Brania Clavata                       | 1         |
| Lower    | 2009 | 250_09LTM | 2   | Brania Clavata                       | 2         |
| Lower    | 2009 | 250_09LTM | 2   | Cerithiopsis Emersonii               | 3         |
| Lower    | 2009 | 250_09LTM | 1   | Cirratulidae                         | 146       |
| Lower    | 2009 | 250_09LTM | 2   | Cirratulidae                         | 359       |
| Lower    | 2009 | 250_09LTM | 2   | Cirratulus Grandis                   | 2         |
| Lower    | 2009 | 250_09LTM | 1   | Cliona Celata                        | 3         |
| Lower    | 2009 | 250_09LTM | 2   | Cliona Celata                        | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Cliona Vastifica                     | 6         |
| Lower    | 2009 | 250_09LTM | 2   | Cliona Vastifica                     | 10        |
| Lower    | 2009 | 250_09LTM | 1   | Clytia Gracilis                      | P         |
| Lower    | 2009 | 250_09LTM | 2   | Clytia Gracilis                      | P         |
| Lower    | 2009 | 250_09LTM | 2   | Clytia Hemisphaerica                 | P         |
| Lower    | 2009 | 250_09LTM | 1   | Crepidula Fornicata                  | 60        |
| Lower    | 2009 | 250_09LTM | 2   | Crepidula Fornicata                  | 24        |
| Lower    | 2009 | 250_09LTM | 1   | Crepidula Plana                      | 49        |
| Lower    | 2009 | 250_09LTM | 2   | Crepidula Plana                      | 33        |
| Lower    | 2009 | 250_09LTM | 1   | Cryptosula Pallasiana                | P         |
| Lower    | 2009 | 250_09LTM | 2   | Cryptosula Pallasiana                | P         |
| Lower    | 2009 | 250_09LTM | 1   | Cumingia Tellinoides                 | 1         |
| Lower    | 2009 | 250_09LTM | 2   | Cumingia Tellinoides                 | 2         |
| Lower    | 2009 | 250_09LTM | 2   | Cyclopoida                           | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Dipolydora Socialis                  | 6         |
| Lower    | 2009 | 250_09LTM | 2   | Dipolydora Socialis                  | 2         |
| Lower    | 2009 | 250_09LTM | 2   | Dodecaceria Sp.                      | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 6         |
| Lower    | 2009 | 250_09LTM | 2   | Dorvillea (Schistomeringos) Annulata | 4         |
| Lower    | 2009 | 250_09LTM | 2   | Drilonereis Longa                    | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Dyspanopeus Sayi                     | 37        |
| Lower    | 2009 | 250_09LTM | 2   | Dyspanopeus Sayi                     | 14        |
| Lower    | 2009 | 250_09LTM | 1   | Eulalia Bilineata                    | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Eumida Sanguinea                     | 4         |
| Lower    | 2009 | 250_09LTM | 2   | Eumida Sanguinea                     | 5         |
| Lower    | 2009 | 250_09LTM | 1   | Eunicidae                            | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Exogone Dispar                       | 12        |
| Lower    | 2009 | 250_09LTM | 2   | Exogone Dispar                       | 9         |
| Lower    | 2009 | 250_09LTM | 1   | Gyptis Vittata                       | 2         |
| Lower    | 2009 | 250_09LTM | 2   | Gyptis Vittata                       | 3         |
| Lower    | 2009 | 250_09LTM | 2   | Halecium Halecinum                   | P         |
| Lower    | 2009 | 250_09LTM | 1   | Halecium Sp.                         | P         |
| Lower    | 2009 | 250_09LTM | 1   | Harmothoe Extenuata                  | 12        |
| Lower    | 2009 | 250_09LTM | 2   | Harmothoe Extenuata                  | 3         |
| Lower    | 2009 | 250_09LTM | 1   | Heteromastus Filiformis              | 3         |
| Lower    | 2009 | 250_09LTM | 2   | Heteromastus Filiformis              | 2         |
| Lower    | 2009 | 250_09LTM | 1   | Heteromysis Formosa                  | 23        |
| Lower    | 2009 | 250_09LTM | 2   | Heteromysis Formosa                  | 4         |
| Lower    | 2009 | 250_09LTM | 1   | Hexapanopeus Angustifrons            | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Ianiropsis Sp. 1                     | 3         |
| Lower    | 2009 | 250_09LTM | 2   | Ianiropsis Sp. 1                     | 15        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Lower    | 2009 | 250_09LTM | 1   | Lembos Smithi                  | 85        |
| Lower    | 2009 | 250_09LTM | 2   | Lembos Smithi                  | 116       |
| Lower    | 2009 | 250_09LTM | 1   | Lepidonotus Squamatus          | 16        |
| Lower    | 2009 | 250_09LTM | 2   | Lepidonotus Squamatus          | 3         |
| Lower    | 2009 | 250_09LTM | 1   | Marphysa Sanguinea             | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Mediomastus Ambiseta           | 15        |
| Lower    | 2009 | 250_09LTM | 2   | Mediomastus Ambiseta           | 26        |
| Lower    | 2009 | 250_09LTM | 1   | Mercenaria Mercenaria          | 3         |
| Lower    | 2009 | 250_09LTM | 2   | Mercenaria Mercenaria          | 1         |
| Lower    | 2009 | 250_09LTM | 2   | Microciona Prolifera           | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Microdeutopus Anomalus         | 1         |
| Lower    | 2009 | 250_09LTM | 2   | Microdeutopus Anomalus         | 2         |
| Lower    | 2009 | 250_09LTM | 1   | Microdeutopus Gryllotalpa      | 2         |
| Lower    | 2009 | 250_09LTM | 1   | Microporella Ciliata           | P         |
| Lower    | 2009 | 250_09LTM | 2   | Microporella Ciliata           | P         |
| Lower    | 2009 | 250_09LTM | 1   | Monocorophium Acherusicum      | 38        |
| Lower    | 2009 | 250_09LTM | 2   | Monocorophium Acherusicum      | 28        |
| Lower    | 2009 | 250_09LTM | 1   | Mulinia Lateralis              | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Neanthes Succinea              | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Nematoda                       | P         |
| Lower    | 2009 | 250_09LTM | 2   | Nematoda                       | P         |
| Lower    | 2009 | 250_09LTM | 1   | Nucula Proxima                 | 17        |
| Lower    | 2009 | 250_09LTM | 2   | Nucula Proxima                 | 26        |
| Lower    | 2009 | 250_09LTM | 2   | Obelia Dichotoma               | P         |
| Lower    | 2009 | 250_09LTM | 1   | Odontosyllis Fulgurans         | 24        |
| Lower    | 2009 | 250_09LTM | 2   | Odontosyllis Fulgurans         | 25        |
| Lower    | 2009 | 250_09LTM | 1   | Oligochaeta                    | 27        |
| Lower    | 2009 | 250_09LTM | 2   | Oligochaeta                    | 98        |
| Lower    | 2009 | 250_09LTM | 2   | Pagurus Annulipes              | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Paracaprella Tenuis            | 2         |
| Lower    | 2009 | 250_09LTM | 2   | Parapionosyllis Longicirrata   | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Pectinaria Gouldi              | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Podarke Obscura                | 68        |
| Lower    | 2009 | 250_09LTM | 2   | Podarke Obscura                | 21        |
| Lower    | 2009 | 250_09LTM | 1   | Polycirrus Eximius             | 1         |
| Lower    | 2009 | 250_09LTM | 2   | Polycirrus Eximius             | 4         |
| Lower    | 2009 | 250_09LTM | 1   | Polycirrus Sp.                 | 9         |
| Lower    | 2009 | 250_09LTM | 2   | Polycirrus Sp.                 | 3         |
| Lower    | 2009 | 250_09LTM | 2   | Polydora Cornuta               | 3         |
| Lower    | 2009 | 250_09LTM | 1   | Potamilla Reniformis           | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Schizoporella Cornuta          | P         |
| Lower    | 2009 | 250_09LTM | 2   | Schizoporella Cornuta          | P         |
| Lower    | 2009 | 250_09LTM | 1   | Schizoporella Unicornis        | P         |
| Lower    | 2009 | 250_09LTM | 2   | Schizoporella Unicornis        | P         |
| Lower    | 2009 | 250_09LTM | 1   | Seila Adamsi                   | 4         |
| Lower    | 2009 | 250_09LTM | 2   | Seila Adamsi                   | 11        |
| Lower    | 2009 | 250_09LTM | 2   | Streblospio Benedicti          | 2         |
| Lower    | 2009 | 250_09LTM | 1   | Syllidae                       | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Syllis Gracilis                | 4         |
| Lower    | 2009 | 250_09LTM | 2   | Syllis Gracilis                | 2         |
| Lower    | 2009 | 250_09LTM | 1   | Terebella Lapidaria            | 1         |
| Lower    | 2009 | 250_09LTM | 1   | Tharyx Acutus                  | 63        |
| Lower    | 2009 | 250_09LTM | 2   | Tharyx Acutus                  | 326       |
| Lower    | 2009 | 250_09LTM | 2   | Turbonilla Interrupta          | 4         |
| Lower    | 2009 | 250_09LTM | 2   | Zygonemertes Virescens         | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Ampelisca Abdita               | 3         |
| Lower    | 2009 | 253_09LTM | 2   | Ampelisca Abdita               | 4         |
| Lower    | 2009 | 253_09LTM | 1   | Capitella Capitata             | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name         | Abundance |
|----------|------|-----------|-----|-------------------------|-----------|
| Lower    | 2009 | 253_09LTM | 2   | Capitella Capitata      | 1         |
| Lower    | 2009 | 253_09LTM | 2   | Cirratulidae            | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Eteone Heteropoda       | 2         |
| Lower    | 2009 | 253_09LTM | 2   | Eteone Heteropoda       | 5         |
| Lower    | 2009 | 253_09LTM | 1   | Gemma Gemma             | 8         |
| Lower    | 2009 | 253_09LTM | 2   | Gemma Gemma             | 7         |
| Lower    | 2009 | 253_09LTM | 1   | Glycinde Solitaria      | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Harpacticoida           | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Heteromastus Filiformis | 1         |
| Lower    | 2009 | 253_09LTM | 2   | Heteromastus Filiformis | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Leitoscoloplos Fragilis | 9         |
| Lower    | 2009 | 253_09LTM | 2   | Leitoscoloplos Fragilis | 11        |
| Lower    | 2009 | 253_09LTM | 1   | Leitoscoloplos Sp.      | 70        |
| Lower    | 2009 | 253_09LTM | 2   | Leitoscoloplos Sp.      | 51        |
| Lower    | 2009 | 253_09LTM | 1   | Leucon Americanus       | 1         |
| Lower    | 2009 | 253_09LTM | 2   | Macoma Tenta            | 2         |
| Lower    | 2009 | 253_09LTM | 1   | Mediomastus Ambiseta    | 44        |
| Lower    | 2009 | 253_09LTM | 2   | Mediomastus Ambiseta    | 24        |
| Lower    | 2009 | 253_09LTM | 1   | Mercenaria Mercenaria   | 2         |
| Lower    | 2009 | 253_09LTM | 2   | Mercenaria Mercenaria   | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Mulinia Lateralis       | 360       |
| Lower    | 2009 | 253_09LTM | 2   | Mulinia Lateralis       | 353       |
| Lower    | 2009 | 253_09LTM | 2   | Neanthes Succinea       | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Nematoda                | P         |
| Lower    | 2009 | 253_09LTM | 2   | Nematoda                | P         |
| Lower    | 2009 | 253_09LTM | 2   | Oligochaeta             | 2         |
| Lower    | 2009 | 253_09LTM | 1   | Pectinaria Gouldi       | 1         |
| Lower    | 2009 | 253_09LTM | 2   | Petricola Pholadiformis | 1         |
| Lower    | 2009 | 253_09LTM | 2   | Podarke Obscura         | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Polydora Cornuta        | 1         |
| Lower    | 2009 | 253_09LTM | 1   | Streblospio Benedicti   | 70        |
| Lower    | 2009 | 253_09LTM | 2   | Streblospio Benedicti   | 44        |
| Lower    | 2009 | 253_09LTM | 1   | Tellina Agilis          | 10        |
| Lower    | 2009 | 253_09LTM | 2   | Tellina Agilis          | 4         |
| Lower    | 2009 | 253_09LTM | 1   | Tellinidae              | 1         |
| Lower    | 2009 | 253_09LTM | 2   | Tharyx Acutus           | 5         |
| Outer    | 2009 | 304_09LTM | 1   | Ampithoe Longimana      | 2         |
| Outer    | 2009 | 304_09LTM | 2   | Ampithoe Longimana      | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Anachis Lafresnayi      | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Anachis Lafresnayi      | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Anadara Transversa      | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Anomia Simplex          | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Anomia Simplex          | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Apocorophium Acutum     | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Apocorophium Acutum     | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Bittium Alternatum      | 5         |
| Outer    | 2009 | 304_09LTM | 1   | Boccardiella Hamata     | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Boccardiella Hamata     | 3         |
| Outer    | 2009 | 304_09LTM | 1   | Boonea Seminuda         | 14        |
| Outer    | 2009 | 304_09LTM | 1   | Brania Clavata          | 2         |
| Outer    | 2009 | 304_09LTM | 1   | Capitella Capitata      | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Capitella Capitata      | 6         |
| Outer    | 2009 | 304_09LTM | 1   | Carazziella Hobsonae    | 69        |
| Outer    | 2009 | 304_09LTM | 2   | Carazziella Hobsonae    | 8         |
| Outer    | 2009 | 304_09LTM | 2   | Cirratulidae            | 33        |
| Outer    | 2009 | 304_09LTM | 1   | Cirratulus Grandis      | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Cirrophorus Furcatus    | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Crepidula Fornicata     | 45        |
| Outer    | 2009 | 304_09LTM | 2   | Crepidula Fornicata     | 15        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Outer    | 2009 | 304_09LTM | 1   | Crepidula Plana                      | 4         |
| Outer    | 2009 | 304_09LTM | 2   | Crepidula Plana                      | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Cumingia Tellinoides                 | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Dipolydora Socialis                  | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Dyspanopeus Sayi                     | 10        |
| Outer    | 2009 | 304_09LTM | 2   | Dyspanopeus Sayi                     | 2         |
| Outer    | 2009 | 304_09LTM | 1   | Euclymene Collaris                   | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Eumida Sanguinea                     | 8         |
| Outer    | 2009 | 304_09LTM | 2   | Eumida Sanguinea                     | 3         |
| Outer    | 2009 | 304_09LTM | 1   | Exogone Dispar                       | 3         |
| Outer    | 2009 | 304_09LTM | 2   | Exogone Dispar                       | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Glycera Americana                    | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Gyptis Vittata                       | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Heteromastus Filiformis              | 40        |
| Outer    | 2009 | 304_09LTM | 2   | Heteromastus Filiformis              | 41        |
| Outer    | 2009 | 304_09LTM | 1   | Heteromysis Formosa                  | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Jassa Marmorata                      | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Lembos Smithi                        | 7         |
| Outer    | 2009 | 304_09LTM | 2   | Lembos Smithi                        | 2         |
| Outer    | 2009 | 304_09LTM | 1   | Lepidonotus Squamatus                | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Listriella Barnardi                  | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Listriella Barnardi                  | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Mediomastus Ambiseta                 | 40        |
| Outer    | 2009 | 304_09LTM | 2   | Mediomastus Ambiseta                 | 8         |
| Outer    | 2009 | 304_09LTM | 1   | Microdeutopus Anomalus               | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Microprotopus Raneyi                 | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Microprotopus Raneyi                 | 2         |
| Outer    | 2009 | 304_09LTM | 1   | Mitrella Lunata                      | 18        |
| Outer    | 2009 | 304_09LTM | 2   | Mitrella Lunata                      | 6         |
| Outer    | 2009 | 304_09LTM | 1   | Mulinia Lateralis                    | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Mulinia Lateralis                    | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Nematoda                             | P         |
| Outer    | 2009 | 304_09LTM | 2   | Nematoda                             | P         |
| Outer    | 2009 | 304_09LTM | 1   | Nucula Proxima                       | 18        |
| Outer    | 2009 | 304_09LTM | 2   | Nucula Proxima                       | 2         |
| Outer    | 2009 | 304_09LTM | 1   | Oligochaeta                          | 152       |
| Outer    | 2009 | 304_09LTM | 2   | Oligochaeta                          | 62        |
| Outer    | 2009 | 304_09LTM | 1   | Ostracoda                            | 3         |
| Outer    | 2009 | 304_09LTM | 1   | Platynereis Dumerilii                | 4         |
| Outer    | 2009 | 304_09LTM | 2   | Platynereis Dumerilii                | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Podarke Obscura                      | 17        |
| Outer    | 2009 | 304_09LTM | 2   | Podarke Obscura                      | 8         |
| Outer    | 2009 | 304_09LTM | 1   | Polycirrus Eximius                   | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Polycirrus Eximius                   | 2         |
| Outer    | 2009 | 304_09LTM | 2   | Polydora Cornuta                     | 2         |
| Outer    | 2009 | 304_09LTM | 1   | Prionospio (Minuspio) Perkinsi       | 2         |
| Outer    | 2009 | 304_09LTM | 1   | Prionospio Heterobranchia            | 19        |
| Outer    | 2009 | 304_09LTM | 2   | Prionospio Heterobranchia            | 3         |
| Outer    | 2009 | 304_09LTM | 1   | Scoletoma Hebes                      | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Seila Adamsi                         | 10        |
| Outer    | 2009 | 304_09LTM | 2   | Seila Adamsi                         | 7         |
| Outer    | 2009 | 304_09LTM | 1   | Sphaerosyllis Taylora                | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Sthenelais Boa                       | 3         |
| Outer    | 2009 | 304_09LTM | 2   | Streblospio Benedicti                | 1         |
| Outer    | 2009 | 304_09LTM | 2   | Tellina Agilis                       | 3         |
| Outer    | 2009 | 304_09LTM | 1   | Tharyx Acutus                        | 8         |
| Outer    | 2009 | 304_09LTM | 2   | Tharyx Acutus                        | 188       |
| Outer    | 2009 | 304_09LTM | 1   | Tubulanus Sp.                        | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name              | Abundance |
|----------|------|-----------|-----|------------------------------|-----------|
| Outer    | 2009 | 304_09LTM | 2   | Turbellaria                  | 1         |
| Outer    | 2009 | 304_09LTM | 1   | Turbonilla Interrupta        | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Ampelisca Vadorum            | 4         |
| Outer    | 2009 | 306_09LTM | 1   | Ampelisca Verrilli           | 5         |
| Outer    | 2009 | 306_09LTM | 1   | Amphiporus Bioculatus        | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Amphiporus Bioculatus        | 3         |
| Outer    | 2009 | 306_09LTM | 2   | Amphiporus Cruentatus        | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Anachis Lafresnayi           | 4         |
| Outer    | 2009 | 306_09LTM | 2   | Anadara Transversa           | 3         |
| Outer    | 2009 | 306_09LTM | 1   | Anomia Simplex               | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Arabella Iricolor            | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Aricidea (Acmira) Catherinae | 11        |
| Outer    | 2009 | 306_09LTM | 2   | Aricidea (Acmira) Catherinae | 3         |
| Outer    | 2009 | 306_09LTM | 2   | Bittium Alternatum           | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Boonea Seminuda              | 15        |
| Outer    | 2009 | 306_09LTM | 2   | Brania Clavata               | 9         |
| Outer    | 2009 | 306_09LTM | 1   | Brania Wellfleetensis        | 23        |
| Outer    | 2009 | 306_09LTM | 2   | Brania Wellfleetensis        | 12        |
| Outer    | 2009 | 306_09LTM | 2   | Bugula Turrita               | P         |
| Outer    | 2009 | 306_09LTM | 2   | Busycon Carica               | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Capitella Capitata           | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Capitella Jonesi             | 5         |
| Outer    | 2009 | 306_09LTM | 2   | Capitella Jonesi             | 4         |
| Outer    | 2009 | 306_09LTM | 2   | Caprella Penantis            | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Cirratulus Grandis           | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Cliona Vastifica             | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Crepidula Convexa            | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Crepidula Fornicata          | 31        |
| Outer    | 2009 | 306_09LTM | 2   | Crepidula Plana              | 5         |
| Outer    | 2009 | 306_09LTM | 2   | Cyclopoida                   | 2         |
| Outer    | 2009 | 306_09LTM | 1   | Dipolydora Socialis          | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Dyspanopeus Sayi             | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Elasmopus Laevis             | 4         |
| Outer    | 2009 | 306_09LTM | 2   | Eobrolgus Spinosus           | 5         |
| Outer    | 2009 | 306_09LTM | 2   | Epitomapta Roseola           | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Eteone Heteropoda            | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Euclymene Collaris           | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Eumida Sanguinea             | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Exogone Dispar               | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Exogone Verugera             | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Glycera Dibranchiata         | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Glycera Dibranchiata         | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Gyptis Vittata               | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Harpacticoida                | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Harpacticoida                | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Hemicyclops Sp.              | 2         |
| Outer    | 2009 | 306_09LTM | 1   | Heteromastus Filiformis      | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Heteromastus Filiformis      | 4         |
| Outer    | 2009 | 306_09LTM | 2   | Ilyanassa Obsoleta           | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Laevicardium Mortoni         | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Laevicardium Mortoni         | 5         |
| Outer    | 2009 | 306_09LTM | 1   | Leitoscoloplos Sp.           | 3         |
| Outer    | 2009 | 306_09LTM | 2   | Leitoscoloplos Sp.           | 8         |
| Outer    | 2009 | 306_09LTM | 2   | Lembos Smithi                | 11        |
| Outer    | 2009 | 306_09LTM | 2   | Leptocheilia Dubia           | 4         |
| Outer    | 2009 | 306_09LTM | 2   | Lysianopsis Alba             | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Maldanidae                   | 3         |
| Outer    | 2009 | 306_09LTM | 1   | Mediomastus Ambiseta         | 7         |
| Outer    | 2009 | 306_09LTM | 2   | Mediomastus Ambiseta         | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 306_09LTM | 2   | Melanella Sarsi                | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Microdeutopus Anomalus         | 5         |
| Outer    | 2009 | 306_09LTM | 2   | Microphthalmus Sp.             | 2         |
| Outer    | 2009 | 306_09LTM | 1   | Microphthalmus Sp. A           | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Microphthalmus Sp. A           | 3         |
| Outer    | 2009 | 306_09LTM | 2   | Microprotopus Raneyi           | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Mitrella Lunata                | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Mitrella Lunata                | 8         |
| Outer    | 2009 | 306_09LTM | 1   | Monocorophium Acherusicum      | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Neanthes Arenaceodentata       | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 306_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 306_09LTM | 1   | Nephtys Incisa                 | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Nephtys Picta                  | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Oligochaeta                    | 55        |
| Outer    | 2009 | 306_09LTM | 2   | Oligochaeta                    | 105       |
| Outer    | 2009 | 306_09LTM | 1   | Ostracoda                      | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Pagurus Annulipes              | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Paracaprella Tenuis            | 2         |
| Outer    | 2009 | 306_09LTM | 1   | Parapionosyllis Longicirrata   | 14        |
| Outer    | 2009 | 306_09LTM | 2   | Parapionosyllis Longicirrata   | 8         |
| Outer    | 2009 | 306_09LTM | 1   | Parougia Caeca                 | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Parougia Caeca                 | 2         |
| Outer    | 2009 | 306_09LTM | 1   | Phyllodoce Arenae              | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Phyllodoce Arenae              | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Platynereis Dumerilii          | 5         |
| Outer    | 2009 | 306_09LTM | 2   | Podarke Obscura                | 10        |
| Outer    | 2009 | 306_09LTM | 1   | Polycirrus Eximius             | 3         |
| Outer    | 2009 | 306_09LTM | 1   | Polygordius Sp.                | 15        |
| Outer    | 2009 | 306_09LTM | 2   | Polygordius Sp.                | 20        |
| Outer    | 2009 | 306_09LTM | 2   | Potamilla Reniformis           | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Prionospio Heterobranchia      | 12        |
| Outer    | 2009 | 306_09LTM | 2   | Prionospio Heterobranchia      | 9         |
| Outer    | 2009 | 306_09LTM | 1   | Protodorvillea Gaspeensis      | 3         |
| Outer    | 2009 | 306_09LTM | 2   | Protodorvillea Gaspeensis      | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Rhepoxynius Hudsoni            | 2         |
| Outer    | 2009 | 306_09LTM | 1   | Rudilemboides Naglei           | 3         |
| Outer    | 2009 | 306_09LTM | 2   | Rudilemboides Naglei           | 9         |
| Outer    | 2009 | 306_09LTM | 2   | Schizoporella Unicornis        | P         |
| Outer    | 2009 | 306_09LTM | 1   | Scolecopsis Texana             | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Scolecopsis Texana             | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Solemya Velum                  | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Spiophanes Bombyx              | 10        |
| Outer    | 2009 | 306_09LTM | 2   | Spiophanes Bombyx              | 8         |
| Outer    | 2009 | 306_09LTM | 1   | Syllides Cf. Verrilli          | 1         |
| Outer    | 2009 | 306_09LTM | 2   | Syllides Cf. Verrilli          | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Tagelus Divisus                | 1         |
| Outer    | 2009 | 306_09LTM | 1   | Tectonatica Pusilla            | 2         |
| Outer    | 2009 | 306_09LTM | 2   | Tellina Agilis                 | 3         |
| Outer    | 2009 | 306_09LTM | 2   | Tharyx Acutus                  | 5         |
| Outer    | 2009 | 309_09LTM | 2   | Ampelisca Vadorum              | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Ampithoe Longimana             | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Anachis Lafresnayi             | 12        |
| Outer    | 2009 | 309_09LTM | 2   | Anachis Lafresnayi             | 6         |
| Outer    | 2009 | 309_09LTM | 1   | Anomia Simplex                 | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Apocorophium Acutum            | 4         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 309_09LTM | 1   | Balanus Venustus               | 46        |
| Outer    | 2009 | 309_09LTM | 2   | Balanus Venustus               | 10        |
| Outer    | 2009 | 309_09LTM | 1   | Boccardiella Hamata            | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Boonea Seminuda                | 20        |
| Outer    | 2009 | 309_09LTM | 2   | Boonea Seminuda                | 33        |
| Outer    | 2009 | 309_09LTM | 2   | Brania Clavata                 | 4         |
| Outer    | 2009 | 309_09LTM | 1   | Capitella Capitata             | 36        |
| Outer    | 2009 | 309_09LTM | 2   | Capitella Capitata             | 16        |
| Outer    | 2009 | 309_09LTM | 1   | Cerebratulus Lacteus           | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Clymenella Torquata            | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Crepidula Fornicata            | 82        |
| Outer    | 2009 | 309_09LTM | 2   | Crepidula Fornicata            | 26        |
| Outer    | 2009 | 309_09LTM | 1   | Crepidula Plana                | 11        |
| Outer    | 2009 | 309_09LTM | 2   | Crepidula Plana                | 4         |
| Outer    | 2009 | 309_09LTM | 1   | Dipolydora Giardi              | 2         |
| Outer    | 2009 | 309_09LTM | 1   | Dipolydora Socialis            | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Dyspanopeus Sayi               | 7         |
| Outer    | 2009 | 309_09LTM | 2   | Dyspanopeus Sayi               | 2         |
| Outer    | 2009 | 309_09LTM | 2   | Eteone Sp.                     | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Eumida Sanguinea               | 5         |
| Outer    | 2009 | 309_09LTM | 1   | Exogone Dispar                 | 21        |
| Outer    | 2009 | 309_09LTM | 2   | Exogone Dispar                 | 5         |
| Outer    | 2009 | 309_09LTM | 2   | Exogone Verugera               | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Fargoa Bartschi                | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Gyptis Vittata                 | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Harpacticoida                  | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Heteromastus Filiformis        | 8         |
| Outer    | 2009 | 309_09LTM | 2   | Heteromastus Filiformis        | 4         |
| Outer    | 2009 | 309_09LTM | 1   | Lembos Smithi                  | 13        |
| Outer    | 2009 | 309_09LTM | 2   | Lembos Smithi                  | 12        |
| Outer    | 2009 | 309_09LTM | 1   | Leptochelia Dubia              | 3         |
| Outer    | 2009 | 309_09LTM | 2   | Leptochelia Dubia              | 2         |
| Outer    | 2009 | 309_09LTM | 1   | Leucon Americanus              | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Maldanidae                     | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Microdeutopus Anomalus         | 36        |
| Outer    | 2009 | 309_09LTM | 2   | Microdeutopus Anomalus         | 7         |
| Outer    | 2009 | 309_09LTM | 1   | Microdeutopus Gryllotalpa      | 11        |
| Outer    | 2009 | 309_09LTM | 2   | Microdeutopus Gryllotalpa      | 21        |
| Outer    | 2009 | 309_09LTM | 1   | Microprotopus Raneyi           | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Microprotopus Raneyi           | 4         |
| Outer    | 2009 | 309_09LTM | 2   | Mitrella Lunata                | 3         |
| Outer    | 2009 | 309_09LTM | 1   | Neanthes Succinea              | 19        |
| Outer    | 2009 | 309_09LTM | 2   | Neanthes Succinea              | 7         |
| Outer    | 2009 | 309_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 309_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 309_09LTM | 2   | Nucula Proxima                 | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Oligochaeta                    | 3         |
| Outer    | 2009 | 309_09LTM | 2   | Oligochaeta                    | 2         |
| Outer    | 2009 | 309_09LTM | 1   | Ostracoda                      | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Ostracoda                      | 38        |
| Outer    | 2009 | 309_09LTM | 1   | Platynereis Dumerilii          | 9         |
| Outer    | 2009 | 309_09LTM | 1   | Podarke Obscura                | 3         |
| Outer    | 2009 | 309_09LTM | 2   | Podarke Obscura                | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Polydora Cornuta               | 5         |
| Outer    | 2009 | 309_09LTM | 2   | Polydora Cornuta               | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Polygordius Sp.                | 3         |
| Outer    | 2009 | 309_09LTM | 2   | Polygordius Sp.                | 2         |
| Outer    | 2009 | 309_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Prionospio Heterobranchia      | 3         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name           | Abundance |
|----------|------|-----------|-----|---------------------------|-----------|
| Outer    | 2009 | 309_09LTM | 2   | Prionospio Heterobranchia | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Scoletoma Hebes           | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Seila Adamsi              | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Tellina Agilis            | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Tharyx Acutus             | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Tharyx Acutus             | 1         |
| Outer    | 2009 | 309_09LTM | 2   | Turbellaria               | 1         |
| Outer    | 2009 | 309_09LTM | 1   | Urosalpinx Cinerea        | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Ampelisca Abdita          | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Ampelisca Vadorum         | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Anadara Transversa        | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Anomia Simplex            | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Balanus Venustus          | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Bittium Alternatum        | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Brania Clavata            | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Brania Clavata            | 5         |
| Outer    | 2009 | 310_09LTM | 2   | Callipallene Brevirostris | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Capitella Capitata        | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Caprella Penantis         | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Clymenella Torquata       | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Clymenella Torquata       | 5         |
| Outer    | 2009 | 310_09LTM | 1   | Crepidula Fornicata       | 34        |
| Outer    | 2009 | 310_09LTM | 2   | Crepidula Fornicata       | 6         |
| Outer    | 2009 | 310_09LTM | 1   | Crepidula Plana           | 4         |
| Outer    | 2009 | 310_09LTM | 2   | Crepidula Plana           | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Dipolydora Socialis       | 3         |
| Outer    | 2009 | 310_09LTM | 2   | Erichsonella Filiformis   | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Euclymene Collaris        | 4         |
| Outer    | 2009 | 310_09LTM | 2   | Euclymene Collaris        | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Eumida Sanguinea          | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Eumida Sanguinea          | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Exogone Dispar            | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Glycera Americana         | 2         |
| Outer    | 2009 | 310_09LTM | 1   | Harpacticoida             | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Heteromastus Filiformis   | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Heteromastus Filiformis   | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Ilyanassa Trivittata      | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Lembos Smithi             | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Lembos Smithi             | 2         |
| Outer    | 2009 | 310_09LTM | 1   | Lepidonotus Squamatus     | 2         |
| Outer    | 2009 | 310_09LTM | 1   | Mediomastus Ambiseta      | 3         |
| Outer    | 2009 | 310_09LTM | 2   | Mediomastus Ambiseta      | 31        |
| Outer    | 2009 | 310_09LTM | 1   | Microciona Prolifera      | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Microdeutopus Anomalous   | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Microdeutopus Anomalous   | 3         |
| Outer    | 2009 | 310_09LTM | 2   | Microphthalmus Sp.        | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Microprotopus Raneyi      | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Mitrella Lunata           | 4         |
| Outer    | 2009 | 310_09LTM | 2   | Mitrella Lunata           | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Neanthes Succinea         | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Nematoda                  | P         |
| Outer    | 2009 | 310_09LTM | 2   | Nematoda                  | P         |
| Outer    | 2009 | 310_09LTM | 2   | Nicolea Zostericola       | 4         |
| Outer    | 2009 | 310_09LTM | 1   | Oligochaeta               | 2         |
| Outer    | 2009 | 310_09LTM | 2   | Oligochaeta               | 21        |
| Outer    | 2009 | 310_09LTM | 2   | Paracaprella Tenuis       | 3         |
| Outer    | 2009 | 310_09LTM | 2   | Phyllodoce Arenae         | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Platynereis Dumerilii     | 3         |
| Outer    | 2009 | 310_09LTM | 2   | Polycirrus Eximius        | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Outer    | 2009 | 310_09LTM | 2   | Polycirrus Sp.                | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Prionospio Heterobranchia     | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Sthenelais Boa                | 1         |
| Outer    | 2009 | 310_09LTM | 1   | Stylochus Ellipticus          | 1         |
| Outer    | 2009 | 310_09LTM | 2   | Tellina Agilis                | 6         |
| Outer    | 2009 | 310_09LTM | 2   | Turbonilla Aequalis           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Ampelisca Vadorum             | 14        |
| Outer    | 2009 | 311_09LTM | 2   | Ampelisca Vadorum             | 5         |
| Outer    | 2009 | 311_09LTM | 1   | Ampelisca Verrilli            | 2         |
| Outer    | 2009 | 311_09LTM | 2   | Ampelisca Verrilli            | 5         |
| Outer    | 2009 | 311_09LTM | 2   | Ampharete Finmarchica         | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Amphiporus Bioculatus         | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Amphiporus Cruentatus         | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Ampithoe Longimana            | 13        |
| Outer    | 2009 | 311_09LTM | 1   | Anachis Lafresnayi            | 2         |
| Outer    | 2009 | 311_09LTM | 2   | Anachis Lafresnayi            | 3         |
| Outer    | 2009 | 311_09LTM | 2   | Anomia Simplex                | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Apocorophium Acutum           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Aricidea (Acmira) Catherinae  | 9         |
| Outer    | 2009 | 311_09LTM | 2   | Aricidea (Acmira) Catherinae  | 5         |
| Outer    | 2009 | 311_09LTM | 1   | Batea Catharinensis           | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Batea Catharinensis           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Bittium Alternatum            | 13        |
| Outer    | 2009 | 311_09LTM | 2   | Bittium Alternatum            | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Boccardiella Hamata           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Brania Clavata                | 5         |
| Outer    | 2009 | 311_09LTM | 2   | Brania Clavata                | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Brania Wellfleetensis         | 8         |
| Outer    | 2009 | 311_09LTM | 2   | Brania Wellfleetensis         | 10        |
| Outer    | 2009 | 311_09LTM | 1   | Bugula Turrita                | P         |
| Outer    | 2009 | 311_09LTM | 1   | Campanulariidae               | P         |
| Outer    | 2009 | 311_09LTM | 1   | Caprella Penantis             | 4         |
| Outer    | 2009 | 311_09LTM | 1   | Caulleriella Cf. Killariensis | 14        |
| Outer    | 2009 | 311_09LTM | 2   | Caulleriella Cf. Killariensis | 37        |
| Outer    | 2009 | 311_09LTM | 1   | Chaetopleura Apiculata        | 3         |
| Outer    | 2009 | 311_09LTM | 2   | Chaetopleura Apiculata        | 4         |
| Outer    | 2009 | 311_09LTM | 2   | Crassinella Lunulata          | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Crepidula Fornicata           | 19        |
| Outer    | 2009 | 311_09LTM | 2   | Crepidula Fornicata           | 38        |
| Outer    | 2009 | 311_09LTM | 2   | Crepidula Plana               | 3         |
| Outer    | 2009 | 311_09LTM | 2   | Dipolydora Socialis           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Dyspanopeus Sayi              | 6         |
| Outer    | 2009 | 311_09LTM | 2   | Dyspanopeus Sayi              | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Elasmopus Laevis              | 14        |
| Outer    | 2009 | 311_09LTM | 2   | Elasmopus Laevis              | 3         |
| Outer    | 2009 | 311_09LTM | 1   | Ensis Directus                | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Eobrolgus Spinosus            | 7         |
| Outer    | 2009 | 311_09LTM | 2   | Eobrolgus Spinosus            | 4         |
| Outer    | 2009 | 311_09LTM | 1   | Epitonium Angulatum           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Erichsonella Filiformis       | 3         |
| Outer    | 2009 | 311_09LTM | 1   | Eumida Sanguinea              | 3         |
| Outer    | 2009 | 311_09LTM | 2   | Eumida Sanguinea              | 10        |
| Outer    | 2009 | 311_09LTM | 1   | Exogone Dispar                | 14        |
| Outer    | 2009 | 311_09LTM | 2   | Exogone Dispar                | 14        |
| Outer    | 2009 | 311_09LTM | 1   | Glycera Americana             | 2         |
| Outer    | 2009 | 311_09LTM | 2   | Glycera Americana             | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Gyptis Vittata                | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Harmothoe Extenuata           | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Harmothoe Extenuata           | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name              | Abundance |
|----------|------|-----------|-----|------------------------------|-----------|
| Outer    | 2009 | 311_09LTM | 1   | Harpacticoida                | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Harpacticoida                | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Heteromastus Filiformis      | 3         |
| Outer    | 2009 | 311_09LTM | 2   | Heteromastus Filiformis      | 4         |
| Outer    | 2009 | 311_09LTM | 1   | Hippolyte Sp.                | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Laevicardium Mortoni         | 2         |
| Outer    | 2009 | 311_09LTM | 2   | Laevicardium Mortoni         | 3         |
| Outer    | 2009 | 311_09LTM | 1   | Leitoscoloplos Acutus        | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Leitoscoloplos Fragilis      | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Leitoscoloplos Fragilis      | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Leitoscoloplos Sp.           | 5         |
| Outer    | 2009 | 311_09LTM | 2   | Leitoscoloplos Sp.           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Lembos Smithi                | 91        |
| Outer    | 2009 | 311_09LTM | 2   | Lembos Smithi                | 35        |
| Outer    | 2009 | 311_09LTM | 1   | Lepidonotus Squamatus        | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Leptocheilia Dubia           | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Lysianopsis Alba             | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Mediomastus Ambiseta         | 6         |
| Outer    | 2009 | 311_09LTM | 2   | Mediomastus Ambiseta         | 5         |
| Outer    | 2009 | 311_09LTM | 1   | Microphthalmus Sp.           | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Micrura Sp.                  | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Mitrella Lunata              | 15        |
| Outer    | 2009 | 311_09LTM | 2   | Mitrella Lunata              | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Monocorophium Acherusicum    | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Nematoda                     | P         |
| Outer    | 2009 | 311_09LTM | 2   | Nematoda                     | P         |
| Outer    | 2009 | 311_09LTM | 1   | Nephtys Picta                | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Nucula Annulata              | 7         |
| Outer    | 2009 | 311_09LTM | 2   | Nucula Annulata              | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Odontosyllis Fulgurans       | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Odontosyllis Fulgurans       | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Oligochaeta                  | 10        |
| Outer    | 2009 | 311_09LTM | 2   | Oligochaeta                  | 9         |
| Outer    | 2009 | 311_09LTM | 2   | Ostracoda                    | 5         |
| Outer    | 2009 | 311_09LTM | 2   | Oxyurostylis Smithi          | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Pagurus Annulipes            | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Paracaprella Tenuis          | 2         |
| Outer    | 2009 | 311_09LTM | 2   | Parapionosyllis Longicirrata | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Phyllodoce Arenae            | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Phyllodoce Arenae            | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Pista Cristata               | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Pista Palmata                | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Pista Palmata                | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Platynereis Dumerilii        | 37        |
| Outer    | 2009 | 311_09LTM | 2   | Platynereis Dumerilii        | 3         |
| Outer    | 2009 | 311_09LTM | 1   | Podarke Obscura              | 18        |
| Outer    | 2009 | 311_09LTM | 2   | Podarke Obscura              | 20        |
| Outer    | 2009 | 311_09LTM | 1   | Polycirrus Eximius           | 18        |
| Outer    | 2009 | 311_09LTM | 2   | Polycirrus Eximius           | 16        |
| Outer    | 2009 | 311_09LTM | 1   | Polycirrus Sp.               | 15        |
| Outer    | 2009 | 311_09LTM | 2   | Polycirrus Sp.               | 33        |
| Outer    | 2009 | 311_09LTM | 1   | Polygordius Sp.              | 69        |
| Outer    | 2009 | 311_09LTM | 2   | Polygordius Sp.              | 77        |
| Outer    | 2009 | 311_09LTM | 1   | Prionospio Heterobranchia    | 30        |
| Outer    | 2009 | 311_09LTM | 2   | Prionospio Heterobranchia    | 51        |
| Outer    | 2009 | 311_09LTM | 1   | Protodorvillea Gaspeensis    | 2         |
| Outer    | 2009 | 311_09LTM | 2   | Protodorvillea Gaspeensis    | 3         |
| Outer    | 2009 | 311_09LTM | 2   | Rhepoxynius Hudsoni          | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Rudilemboides Naglei         | 7         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 311_09LTM | 2   | Rudilemboides Naglei           | 16        |
| Outer    | 2009 | 311_09LTM | 2   | Saccoglossus Kowalevskii       | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Sacoglossa                     | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Sacoglossa                     | 5         |
| Outer    | 2009 | 311_09LTM | 2   | Sclerodactyla Briareus         | 1         |
| Outer    | 2009 | 311_09LTM | 2   | Seila Adamsi                   | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Solemya Velum                  | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Sphaerosyllis Taylori          | 2         |
| Outer    | 2009 | 311_09LTM | 2   | Sphaerosyllis Taylori          | 1         |
| Outer    | 2009 | 311_09LTM | 1   | Spiophanes Bombyx              | 6         |
| Outer    | 2009 | 311_09LTM | 2   | Spiophanes Bombyx              | 6         |
| Outer    | 2009 | 311_09LTM | 1   | Sthenelais Boa                 | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Syllides Cf. Verrilli          | 3         |
| Outer    | 2009 | 311_09LTM | 2   | Syllides Cf. Verrilli          | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Tagelus Divisus                | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Tellina Agilis                 | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Tharyx Acutus                  | 2         |
| Outer    | 2009 | 311_09LTM | 1   | Turbellaria                    | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Acteocina Canaliculata         | 28        |
| Outer    | 2009 | 317_09LTM | 2   | Acteocina Canaliculata         | 26        |
| Outer    | 2009 | 317_09LTM | 1   | Cylichna Oryza                 | 29        |
| Outer    | 2009 | 317_09LTM | 2   | Cylichna Oryza                 | 7         |
| Outer    | 2009 | 317_09LTM | 1   | Haminoea Solitaria             | 2         |
| Outer    | 2009 | 317_09LTM | 2   | Haminoea Solitaria             | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Lembos Smithi                  | 1         |
| Outer    | 2009 | 317_09LTM | 2   | Lembos Smithi                  | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Macoma Tenta                   | 12        |
| Outer    | 2009 | 317_09LTM | 2   | Macoma Tenta                   | 2         |
| Outer    | 2009 | 317_09LTM | 1   | Mediomastus Ambiseta           | 56        |
| Outer    | 2009 | 317_09LTM | 2   | Mediomastus Ambiseta           | 6         |
| Outer    | 2009 | 317_09LTM | 2   | Melinna Cristata               | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 317_09LTM | 1   | Nephtys Incisa                 | 32        |
| Outer    | 2009 | 317_09LTM | 2   | Nephtys Incisa                 | 18        |
| Outer    | 2009 | 317_09LTM | 2   | Ninoe Nigripes                 | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Nucula Annulata                | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Oligochaeta                    | 14        |
| Outer    | 2009 | 317_09LTM | 2   | Oligochaeta                    | 2         |
| Outer    | 2009 | 317_09LTM | 1   | Ostracoda                      | 1         |
| Outer    | 2009 | 317_09LTM | 2   | Ostracoda                      | 2         |
| Outer    | 2009 | 317_09LTM | 2   | Podarke Obscura                | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Polygordius Sp.                | 3         |
| Outer    | 2009 | 317_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 317_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Rictaxis Punctostriatus        | 3         |
| Outer    | 2009 | 317_09LTM | 2   | Scolelepis Bousfieldi          | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Scolelepis Sp.                 | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Spiochaetopterus Oculatus      | 2         |
| Outer    | 2009 | 317_09LTM | 2   | Spiochaetopterus Oculatus      | 2         |
| Outer    | 2009 | 317_09LTM | 1   | Spisula Solidissima            | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Tellina Agilis                 | 2         |
| Outer    | 2009 | 317_09LTM | 2   | Tharyx Acutus                  | 1         |
| Outer    | 2009 | 317_09LTM | 1   | Tubulanus Sp.                  | 2         |
| Outer    | 2009 | 317_09LTM | 2   | Tubulanus Sp.                  | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Ampelisca Vadorum              | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Ampelisca Vadorum              | 3         |
| Outer    | 2009 | 318_09LTM | 1   | Ampelisca Verrilli             | 5         |
| Outer    | 2009 | 318_09LTM | 2   | Ampelisca Verrilli             | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Ampharete Finmarchica          | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Outer    | 2009 | 318_09LTM | 1   | Amphiporus Bioculatus         | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Amphiporus Cruentatus         | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Ampithoe Longimana            | 3         |
| Outer    | 2009 | 318_09LTM | 1   | Aricidea (Acmira) Catherinae  | 27        |
| Outer    | 2009 | 318_09LTM | 2   | Aricidea (Acmira) Catherinae  | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Balanus Venustus              | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Bittium Alternatum            | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Boonea Seminuda               | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Brania Clavata                | 6         |
| Outer    | 2009 | 318_09LTM | 1   | Brania Wellfleetensis         | 19        |
| Outer    | 2009 | 318_09LTM | 2   | Brania Wellfleetensis         | 3         |
| Outer    | 2009 | 318_09LTM | 2   | Cabira Incerta                | 3         |
| Outer    | 2009 | 318_09LTM | 1   | Capitella Jonesi              | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Caprella Penantis             | 3         |
| Outer    | 2009 | 318_09LTM | 1   | Caulleriella Cf. Killariensis | 13        |
| Outer    | 2009 | 318_09LTM | 2   | Cerastoderma Pinnulatum       | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Chaetopleura Apiculata        | 4         |
| Outer    | 2009 | 318_09LTM | 1   | Cirratulus Grandis            | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Clymenella Torquata           | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Crassinella Lunulata          | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Crepidula Fornicata           | 9         |
| Outer    | 2009 | 318_09LTM | 1   | Crepidula Plana               | 3         |
| Outer    | 2009 | 318_09LTM | 2   | Crepidula Plana               | 2         |
| Outer    | 2009 | 318_09LTM | 1   | Diopatra Cuprea               | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Dipolydora Socialis           | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Dyspanopeus Sayi              | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Dyspanopeus Sayi              | 2         |
| Outer    | 2009 | 318_09LTM | 1   | Elasmopus Laevis              | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Elasmopus Laevis              | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Electra Pilosa                | P         |
| Outer    | 2009 | 318_09LTM | 1   | Eobrolgus Spinosus            | 3         |
| Outer    | 2009 | 318_09LTM | 2   | Eobrolgus Spinosus            | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Eumida Sanguinea              | 3         |
| Outer    | 2009 | 318_09LTM | 2   | Eumida Sanguinea              | 4         |
| Outer    | 2009 | 318_09LTM | 1   | Exogone Dispar                | 4         |
| Outer    | 2009 | 318_09LTM | 1   | Glycera Sp.                   | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Harpacticoida                 | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Lacuna Vincta                 | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Lembos Smithi                 | 22        |
| Outer    | 2009 | 318_09LTM | 2   | Lembos Smithi                 | 20        |
| Outer    | 2009 | 318_09LTM | 1   | Leptochelia Dubia             | 4         |
| Outer    | 2009 | 318_09LTM | 2   | Leptochelia Dubia             | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Listriella Barnardi           | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Mediomastus Ambiseta          | 2         |
| Outer    | 2009 | 318_09LTM | 1   | Microphthalmus Sp.            | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Mitrella Lunata               | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Mytilus Edulis                | 3         |
| Outer    | 2009 | 318_09LTM | 1   | Nematoda                      | P         |
| Outer    | 2009 | 318_09LTM | 2   | Nematoda                      | P         |
| Outer    | 2009 | 318_09LTM | 1   | Nephtys Picta                 | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Nephtys Picta                 | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Nicolea Zostericola           | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Odontosyllis Fulgurans        | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Oligochaeta                   | 39        |
| Outer    | 2009 | 318_09LTM | 2   | Oligochaeta                   | 2         |
| Outer    | 2009 | 318_09LTM | 1   | Oxyurostylis Smithi           | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Pagurus Annulipes             | 7         |
| Outer    | 2009 | 318_09LTM | 1   | Paracaprella Tenuis           | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Paraonidae                    | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Outer    | 2009 | 318_09LTM | 1   | Parapionosyllis Longicirrata         | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Parapionosyllis Longicirrata         | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Parougia Caeca                       | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Parougia Caeca                       | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Phyllodoce Arenae                    | 3         |
| Outer    | 2009 | 318_09LTM | 2   | Phyllodoce Arenae                    | 4         |
| Outer    | 2009 | 318_09LTM | 1   | Pinnixa Chaetoptera                  | 2         |
| Outer    | 2009 | 318_09LTM | 2   | Pinnixa Chaetoptera                  | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Pista Palmata                        | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Platynereis Dumerilii                | 5         |
| Outer    | 2009 | 318_09LTM | 2   | Platynereis Dumerilii                | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Podarke Obscura                      | 6         |
| Outer    | 2009 | 318_09LTM | 2   | Podarke Obscura                      | 3         |
| Outer    | 2009 | 318_09LTM | 1   | Polycirrus Eximius                   | 22        |
| Outer    | 2009 | 318_09LTM | 2   | Polycirrus Eximius                   | 6         |
| Outer    | 2009 | 318_09LTM | 1   | Polycirrus Sp.                       | 28        |
| Outer    | 2009 | 318_09LTM | 2   | Polycirrus Sp.                       | 23        |
| Outer    | 2009 | 318_09LTM | 1   | Polygordius Sp.                      | 158       |
| Outer    | 2009 | 318_09LTM | 2   | Polygordius Sp.                      | 3         |
| Outer    | 2009 | 318_09LTM | 1   | Prionospio Heterobranchia            | 3         |
| Outer    | 2009 | 318_09LTM | 2   | Prionospio Heterobranchia            | 2         |
| Outer    | 2009 | 318_09LTM | 1   | Protodorvillea Gaspeensis            | 5         |
| Outer    | 2009 | 318_09LTM | 1   | Rhepoxynius Hudsoni                  | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Rudilemboides Naglei                 | 19        |
| Outer    | 2009 | 318_09LTM | 2   | Rudilemboides Naglei                 | 12        |
| Outer    | 2009 | 318_09LTM | 1   | Sacoglossa                           | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Sphaerodoropsis Minuta               | 4         |
| Outer    | 2009 | 318_09LTM | 2   | Sphaerodoropsis Minuta               | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Sphaerosyllis Taylora                | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Spiophanes Bombyx                    | 10        |
| Outer    | 2009 | 318_09LTM | 2   | Spiophanes Bombyx                    | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Sthenelais Boa                       | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Sthenelais Boa                       | 1         |
| Outer    | 2009 | 318_09LTM | 2   | Tagelus Divisus                      | 1         |
| Outer    | 2009 | 318_09LTM | 1   | Tectonatica Pusilla                  | 3         |
| Outer    | 2009 | 318_09LTM | 2   | Tectonatica Pusilla                  | 2         |
| Outer    | 2009 | 318_09LTM | 1   | Tharyx Acutus                        | 5         |
| Outer    | 2009 | 318_09LTM | 1   | Unciola Irrorata                     | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Ampelisca Abdita                     | 5         |
| Outer    | 2009 | 323_09LTM | 2   | Ampelisca Vadorum                    | 9         |
| Outer    | 2009 | 323_09LTM | 1   | Ampharete Finmarchica                | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Anachis Lafresnaya                   | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Anachis Lafresnaya                   | 2         |
| Outer    | 2009 | 323_09LTM | 1   | Anadara Transversa                   | 2         |
| Outer    | 2009 | 323_09LTM | 2   | Anadara Transversa                   | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Batea Catharinensis                  | 4         |
| Outer    | 2009 | 323_09LTM | 2   | Bittium Alternatum                   | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Bivalvia                             | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Capitella Capitata                   | 4         |
| Outer    | 2009 | 323_09LTM | 2   | Capitella Capitata                   | 137       |
| Outer    | 2009 | 323_09LTM | 2   | Capitella Jonesi                     | 6         |
| Outer    | 2009 | 323_09LTM | 1   | Clinocardium Ciliatum                | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Crangon Septemspinosa                | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Crepidula Fornicata                  | 6         |
| Outer    | 2009 | 323_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 12        |
| Outer    | 2009 | 323_09LTM | 2   | Dorvillea (Schistomeringos) Annulata | 3         |
| Outer    | 2009 | 323_09LTM | 1   | Dyspanopeus Sayi                     | 7         |
| Outer    | 2009 | 323_09LTM | 2   | Dyspanopeus Sayi                     | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Erichthonius Brasiliensis            | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 323_09LTM | 1   | Eteone Heteropoda              | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Euclymene Collaris             | 6         |
| Outer    | 2009 | 323_09LTM | 2   | Euclymene Collaris             | 3         |
| Outer    | 2009 | 323_09LTM | 2   | Exogone Dispar                 | 7         |
| Outer    | 2009 | 323_09LTM | 1   | Glycera Americana              | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Glycinde Solitaria             | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Gyptis Vittata                 | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Gyptis Vittata                 | 2         |
| Outer    | 2009 | 323_09LTM | 2   | Haliclona Loosanoffi           | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Harmothoe Sp.                  | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Heteromastus Filiformis        | 2         |
| Outer    | 2009 | 323_09LTM | 1   | Heteromysis Formosa            | 4         |
| Outer    | 2009 | 323_09LTM | 2   | Lysianopsis Alba               | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Maldane Sarsi                  | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Mediomastus Ambiseta           | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Mediomastus Ambiseta           | 5         |
| Outer    | 2009 | 323_09LTM | 1   | Microdeutopus Anomalus         | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Microdeutopus Anomalus         | 7         |
| Outer    | 2009 | 323_09LTM | 2   | Microtopus Raneyi              | 3         |
| Outer    | 2009 | 323_09LTM | 1   | Mitrella Lunata                | 3         |
| Outer    | 2009 | 323_09LTM | 2   | Mitrella Lunata                | 11        |
| Outer    | 2009 | 323_09LTM | 2   | Neanthes Succinea              | 17        |
| Outer    | 2009 | 323_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 323_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 323_09LTM | 2   | Nucula Annulata                | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Ostracoda                      | 3         |
| Outer    | 2009 | 323_09LTM | 2   | Oxyurostylis Smithi            | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Paracaprella Tenuis            | 2         |
| Outer    | 2009 | 323_09LTM | 2   | Parougia Caeca                 | 2         |
| Outer    | 2009 | 323_09LTM | 1   | Pectinaria Gouldi              | 3         |
| Outer    | 2009 | 323_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Phyllodoce Arenae              | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Phyllodoce Arenae              | 2         |
| Outer    | 2009 | 323_09LTM | 1   | Pinnixa Chaetoptera            | 4         |
| Outer    | 2009 | 323_09LTM | 2   | Pinnixa Chaetoptera            | 6         |
| Outer    | 2009 | 323_09LTM | 2   | Pinnixa Sayana                 | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Pista Palmata                  | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Platynereis Dumerilii          | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Platynereis Dumerilii          | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Podarke Obscura                | 2         |
| Outer    | 2009 | 323_09LTM | 2   | Podarke Obscura                | 8         |
| Outer    | 2009 | 323_09LTM | 2   | Polydora Cornuta               | 2         |
| Outer    | 2009 | 323_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 6         |
| Outer    | 2009 | 323_09LTM | 1   | Prionospio Heterobranchia      | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Prionospio Heterobranchia      | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Solemya Velum                  | 1         |
| Outer    | 2009 | 323_09LTM | 2   | Sphaerosyllis Taylori          | 2         |
| Outer    | 2009 | 323_09LTM | 1   | Tagelus Divisus                | 1         |
| Outer    | 2009 | 323_09LTM | 1   | Tellina Agilis                 | 4         |
| Outer    | 2009 | 323_09LTM | 2   | Tellina Agilis                 | 4         |
| Outer    | 2009 | 323_09LTM | 2   | Zaops Ostreum                  | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Acteocina Canaliculata         | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Ampelisca Abdita               | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Ampelisca Abdita               | 5         |
| Outer    | 2009 | 324_09LTM | 2   | Ampelisca Vadorum              | 2         |
| Outer    | 2009 | 324_09LTM | 2   | Ampharete Finmarchica          | 3         |
| Outer    | 2009 | 324_09LTM | 1   | Amphiporus Bioculatus          | 5         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 324_09LTM | 1   | Ampithoe Longimana             | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Batea Catharinensis            | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Bivalvia                       | 6         |
| Outer    | 2009 | 324_09LTM | 2   | Capitella Capitata             | 4         |
| Outer    | 2009 | 324_09LTM | 1   | Caprella Penantis              | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Cirratulidae                   | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Clymenella Torquata            | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Crepidula Fornicata            | 11        |
| Outer    | 2009 | 324_09LTM | 1   | Crepidula Plana                | 5         |
| Outer    | 2009 | 324_09LTM | 2   | Crepidula Plana                | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Cylichna Oryza                 | 3         |
| Outer    | 2009 | 324_09LTM | 2   | Dipolydora Socialis            | 2         |
| Outer    | 2009 | 324_09LTM | 1   | Dyspanopeus Sayi               | 3         |
| Outer    | 2009 | 324_09LTM | 1   | Euclymene Collaris             | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Euclymene Collaris             | 6         |
| Outer    | 2009 | 324_09LTM | 2   | Eumida Sanguinea               | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Glycera Sp.                    | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Heteromysis Formosa            | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Hexapanopeus Angustifrons      | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Hippolyte Sp.                  | 2         |
| Outer    | 2009 | 324_09LTM | 1   | Hippolyte Zostericola          | 5         |
| Outer    | 2009 | 324_09LTM | 2   | Ilyanassa Obsoleta             | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Leptochelia Dubia              | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Macoma Tenta                   | 25        |
| Outer    | 2009 | 324_09LTM | 2   | Macoma Tenta                   | 27        |
| Outer    | 2009 | 324_09LTM | 1   | Mediomastus Ambiseta           | 12        |
| Outer    | 2009 | 324_09LTM | 2   | Mediomastus Ambiseta           | 8         |
| Outer    | 2009 | 324_09LTM | 1   | Microdeutopus Anomalus         | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Microprotopus Raneyi           | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Microprotopus Raneyi           | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Mitrella Lunata                | 4         |
| Outer    | 2009 | 324_09LTM | 2   | Mitrella Lunata                | 2         |
| Outer    | 2009 | 324_09LTM | 2   | Monticellina Dorsobranchialis  | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 324_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 324_09LTM | 1   | Nephtys Incisa                 | 27        |
| Outer    | 2009 | 324_09LTM | 2   | Nephtys Incisa                 | 42        |
| Outer    | 2009 | 324_09LTM | 1   | Nicolea Zostericola            | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Ninoe Nigripes                 | 2         |
| Outer    | 2009 | 324_09LTM | 1   | Nucula Annulata                | 2         |
| Outer    | 2009 | 324_09LTM | 2   | Nucula Annulata                | 13        |
| Outer    | 2009 | 324_09LTM | 1   | Oligochaeta                    | 2         |
| Outer    | 2009 | 324_09LTM | 2   | Oligochaeta                    | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Ostracoda                      | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Ostracoda                      | 3         |
| Outer    | 2009 | 324_09LTM | 1   | Pagurus Annulipes              | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Pandora Glacialis              | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Paracaprella Tenuis            | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Parapionosyllis Longicirrata   | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Platynereis Dumerilii          | 2         |
| Outer    | 2009 | 324_09LTM | 2   | Polycirrus Eximius             | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 5         |
| Outer    | 2009 | 324_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 324_09LTM | 1   | Sphaerosyllis Taylori          | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Spiochaetopterus Oculatus      | 2         |
| Outer    | 2009 | 324_09LTM | 1   | Tellina Agilis                 | 2         |
| Outer    | 2009 | 324_09LTM | 2   | Tellina Agilis                 | 3         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 324_09LTM | 1   | Tellinidae                     | 22        |
| Outer    | 2009 | 324_09LTM | 2   | Tellinidae                     | 18        |
| Outer    | 2009 | 324_09LTM | 1   | Tharyx Acutus                  | 1         |
| Outer    | 2009 | 324_09LTM | 2   | Tharyx Acutus                  | 3         |
| Outer    | 2009 | 324_09LTM | 1   | Tubulanus Sp.                  | 3         |
| Outer    | 2009 | 324_09LTM | 2   | Typosyllis Alternata           | 2         |
| Outer    | 2009 | 325_09LTM | 1   | Acteocina Canaliculata         | 32        |
| Outer    | 2009 | 325_09LTM | 2   | Acteocina Canaliculata         | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Ampharete Finmarchica          | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Amphiporus Bioculatus          | 2         |
| Outer    | 2009 | 325_09LTM | 1   | Bivalvia                       | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Carazziella Hobsonae           | 2         |
| Outer    | 2009 | 325_09LTM | 1   | Cirrophorus Furcatus           | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Cirrophorus Furcatus           | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Cylichna Oryza                 | 169       |
| Outer    | 2009 | 325_09LTM | 2   | Cylichna Oryza                 | 80        |
| Outer    | 2009 | 325_09LTM | 1   | Diopatra Cuprea                | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Dipolydora Socialis            | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Euclymene Collaris             | 2         |
| Outer    | 2009 | 325_09LTM | 2   | Euplana Gracilis               | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Haminoea Solitaria             | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Hutchinsoniella Macracantha    | 2         |
| Outer    | 2009 | 325_09LTM | 2   | Ilyanassa Trivittata           | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Kurtziella Cerina              | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Lyonsia Hyalina                | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Macoma Tenta                   | 97        |
| Outer    | 2009 | 325_09LTM | 2   | Macoma Tenta                   | 66        |
| Outer    | 2009 | 325_09LTM | 1   | Maldane Sarsi                  | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Mediomastus Ambiseta           | 2         |
| Outer    | 2009 | 325_09LTM | 2   | Mediomastus Ambiseta           | 3         |
| Outer    | 2009 | 325_09LTM | 1   | Melinna Cristata               | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Melinna Cristata               | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Mitrella Lunata                | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Mulinia Lateralis              | 9         |
| Outer    | 2009 | 325_09LTM | 2   | Mulinia Lateralis              | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 325_09LTM | 1   | Nephtys Incisa                 | 39        |
| Outer    | 2009 | 325_09LTM | 2   | Nephtys Incisa                 | 62        |
| Outer    | 2009 | 325_09LTM | 1   | Ninoe Nigripes                 | 3         |
| Outer    | 2009 | 325_09LTM | 1   | Nucula Annulata                | 2         |
| Outer    | 2009 | 325_09LTM | 2   | Oligochaeta                    | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Ostracoda                      | 24        |
| Outer    | 2009 | 325_09LTM | 2   | Ostracoda                      | 5         |
| Outer    | 2009 | 325_09LTM | 1   | Parougia Caeca                 | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Pectinaria Gouldi              | 4         |
| Outer    | 2009 | 325_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Pinnixa Sayana                 | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Pitar Morrhuanus               | 3         |
| Outer    | 2009 | 325_09LTM | 2   | Pitar Morrhuanus               | 3         |
| Outer    | 2009 | 325_09LTM | 2   | Podarke Obscura                | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Polycirrus Sp.                 | 2         |
| Outer    | 2009 | 325_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 7         |
| Outer    | 2009 | 325_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 7         |
| Outer    | 2009 | 325_09LTM | 2   | Protodorvillea Gaspeensis      | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Saccoglossus Kowalevskii       | 3         |
| Outer    | 2009 | 325_09LTM | 2   | Saccoglossus Kowalevskii       | 4         |
| Outer    | 2009 | 325_09LTM | 1   | Spiochaetopterus Oculatus      | 2         |
| Outer    | 2009 | 325_09LTM | 1   | Stylochus Ellipticus           | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Stylochus Ellipticus           | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name              | Abundance |
|----------|------|-----------|-----|------------------------------|-----------|
| Outer    | 2009 | 325_09LTM | 2   | Tellina Agilis               | 2         |
| Outer    | 2009 | 325_09LTM | 1   | Tellinidae                   | 18        |
| Outer    | 2009 | 325_09LTM | 2   | Tellinidae                   | 18        |
| Outer    | 2009 | 325_09LTM | 1   | Tubulanus Sp.                | 1         |
| Outer    | 2009 | 325_09LTM | 2   | Tubulanus Sp.                | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Turbonilla Aequalis          | 4         |
| Outer    | 2009 | 325_09LTM | 1   | Turbonilla Interrupta        | 1         |
| Outer    | 2009 | 325_09LTM | 1   | Yoldia Sp.                   | 3         |
| Outer    | 2009 | 325_09LTM | 2   | Yoldia Sp.                   | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Acteocina Canaliculata       | 39        |
| Outer    | 2009 | 331_09LTM | 2   | Acteocina Canaliculata       | 41        |
| Outer    | 2009 | 331_09LTM | 1   | Ampharete Finmarchica        | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Amphiporus Bioculatus        | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Amphiporus Bioculatus        | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Aricidea (Acmira) Catherinae | 20        |
| Outer    | 2009 | 331_09LTM | 2   | Aricidea (Acmira) Catherinae | 22        |
| Outer    | 2009 | 331_09LTM | 1   | Bivalvia                     | 4         |
| Outer    | 2009 | 331_09LTM | 1   | Carazziella Hobsonae         | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Cerastoderma Pinnulatum      | 2         |
| Outer    | 2009 | 331_09LTM | 2   | Ceriantharia                 | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Cirrophorus Furcatus         | 2         |
| Outer    | 2009 | 331_09LTM | 2   | Cirrophorus Furcatus         | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Cylichna Oryza               | 77        |
| Outer    | 2009 | 331_09LTM | 2   | Cylichna Oryza               | 88        |
| Outer    | 2009 | 331_09LTM | 2   | Diopatra Cuprea              | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Dipolydora Socialis          | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Edwardsia Elegans            | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Edwardsia Elegans            | 2         |
| Outer    | 2009 | 331_09LTM | 1   | Epitonium Dallianum          | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Euclymene Collaris           | 2         |
| Outer    | 2009 | 331_09LTM | 1   | Gastropoda                   | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Golfingia Sp.                | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Haminoea Solitaria           | 2         |
| Outer    | 2009 | 331_09LTM | 1   | Hutchinsoniella Macracantha  | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Ilyanassa Trivittata         | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Kurtziella Cerina            | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Lyonsia Hyalina              | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Macoma Tenta                 | 190       |
| Outer    | 2009 | 331_09LTM | 2   | Macoma Tenta                 | 155       |
| Outer    | 2009 | 331_09LTM | 1   | Maldane Sarsi                | 2         |
| Outer    | 2009 | 331_09LTM | 2   | Maldane Sarsi                | 3         |
| Outer    | 2009 | 331_09LTM | 1   | Mediomastus Ambiseta         | 9         |
| Outer    | 2009 | 331_09LTM | 2   | Mediomastus Ambiseta         | 23        |
| Outer    | 2009 | 331_09LTM | 1   | Melinna Cristata             | 2         |
| Outer    | 2009 | 331_09LTM | 2   | Melinna Cristata             | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Mitrella Lunata              | 8         |
| Outer    | 2009 | 331_09LTM | 2   | Mitrella Lunata              | 4         |
| Outer    | 2009 | 331_09LTM | 1   | Mulinia Lateralis            | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Mulinia Lateralis            | 4         |
| Outer    | 2009 | 331_09LTM | 2   | Nematoda                     | P         |
| Outer    | 2009 | 331_09LTM | 1   | Nephtys Incisa               | 26        |
| Outer    | 2009 | 331_09LTM | 2   | Nephtys Incisa               | 23        |
| Outer    | 2009 | 331_09LTM | 1   | Ninoe Nigripes               | 3         |
| Outer    | 2009 | 331_09LTM | 2   | Notomastus Latericeus        | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Nucula Annulata              | 13        |
| Outer    | 2009 | 331_09LTM | 2   | Nucula Annulata              | 9         |
| Outer    | 2009 | 331_09LTM | 1   | Oligochaeta                  | 8         |
| Outer    | 2009 | 331_09LTM | 2   | Oligochaeta                  | 14        |
| Outer    | 2009 | 331_09LTM | 1   | Ostracoda                    | 62        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 331_09LTM | 2   | Ostracoda                      | 10        |
| Outer    | 2009 | 331_09LTM | 2   | Ostracoda                      | 6         |
| Outer    | 2009 | 331_09LTM | 1   | Parougia Caeca                 | 2         |
| Outer    | 2009 | 331_09LTM | 2   | Parougia Caeca                 | 7         |
| Outer    | 2009 | 331_09LTM | 1   | Pectinaria Gouldi              | 5         |
| Outer    | 2009 | 331_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Phyllodoce Arenae              | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Pilargidae                     | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Pinnixa Chaetoptera            | 3         |
| Outer    | 2009 | 331_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Polyonyx Gibbesi               | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 19        |
| Outer    | 2009 | 331_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 15        |
| Outer    | 2009 | 331_09LTM | 1   | Protodorvillea Gaspeensis      | 4         |
| Outer    | 2009 | 331_09LTM | 2   | Protodorvillea Gaspeensis      | 4         |
| Outer    | 2009 | 331_09LTM | 1   | Saccoglossus Kowalevskii       | 8         |
| Outer    | 2009 | 331_09LTM | 2   | Saccoglossus Kowalevskii       | 9         |
| Outer    | 2009 | 331_09LTM | 1   | Sacoglossa                     | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Scolecipis Bousfieldi          | 5         |
| Outer    | 2009 | 331_09LTM | 2   | Scolecipis Bousfieldi          | 5         |
| Outer    | 2009 | 331_09LTM | 1   | Sphaerosyllis Taylori          | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Spiochaetopterus Oculatus      | 5         |
| Outer    | 2009 | 331_09LTM | 1   | Syllides Cf. Verrilli          | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Syllides Cf. Verrilli          | 2         |
| Outer    | 2009 | 331_09LTM | 1   | Tectonatica Pusilla            | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Tectonatica Pusilla            | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Tellina Agilis                 | 2         |
| Outer    | 2009 | 331_09LTM | 1   | Tellinidae                     | 17        |
| Outer    | 2009 | 331_09LTM | 2   | Tellinidae                     | 32        |
| Outer    | 2009 | 331_09LTM | 1   | Tharyx Acutus                  | 3         |
| Outer    | 2009 | 331_09LTM | 2   | Tharyx Acutus                  | 3         |
| Outer    | 2009 | 331_09LTM | 1   | Tubulanus Sp.                  | 7         |
| Outer    | 2009 | 331_09LTM | 2   | Tubulanus Sp.                  | 7         |
| Outer    | 2009 | 331_09LTM | 1   | Turbonilla Aequalis            | 2         |
| Outer    | 2009 | 331_09LTM | 1   | Turbonilla Elegantula          | 1         |
| Outer    | 2009 | 331_09LTM | 2   | Turbonilla Elegantula          | 1         |
| Outer    | 2009 | 331_09LTM | 1   | Yoldia Limatula                | 3         |
| Outer    | 2009 | 331_09LTM | 2   | Yoldia Sp.                     | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Acteocina Canaliculata         | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Acteocina Canaliculata         | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Aglaophamus Neotenus           | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Ampelisca Abdita               | 6         |
| Outer    | 2009 | 332_09LTM | 1   | Ampelisca Vadorum              | 34        |
| Outer    | 2009 | 332_09LTM | 2   | Ampelisca Vadorum              | 36        |
| Outer    | 2009 | 332_09LTM | 1   | Ampelisca Verrilli             | 35        |
| Outer    | 2009 | 332_09LTM | 2   | Ampelisca Verrilli             | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Ampharete Finmarchica          | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Ampharetidae                   | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Amphiporus Bioculatus          | 18        |
| Outer    | 2009 | 332_09LTM | 2   | Amphiporus Bioculatus          | 3         |
| Outer    | 2009 | 332_09LTM | 1   | Anadara Ovalis                 | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Anadara Transversa             | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Anadara Transversa             | 6         |
| Outer    | 2009 | 332_09LTM | 1   | Ancistrosyllis Hartmanae       | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Anomia Simplex                 | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Arabella Iricolor              | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Aricidea (Acmira) Catherinae   | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Aricidea (Acmira) Catherinae   | 3         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name          | Abundance |
|----------|------|-----------|-----|--------------------------|-----------|
| Outer    | 2009 | 332_09LTM | 1   | Balanus Venustus         | 19        |
| Outer    | 2009 | 332_09LTM | 2   | Balanus Venustus         | 8         |
| Outer    | 2009 | 332_09LTM | 1   | Bivalvia                 | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Boonea Seminuda          | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Boonea Seminuda          | 6         |
| Outer    | 2009 | 332_09LTM | 1   | Brania Clavata           | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Brania Wellfleetensis    | 10        |
| Outer    | 2009 | 332_09LTM | 2   | Brania Wellfleetensis    | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Capitella Jonesi         | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Capitella Jonesi         | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Carazziella Hobsonae     | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Carazziella Hobsonae     | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Cerastoderma Pinnulatum  | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Cirratulidae             | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Cirrophorus Furcatus     | 5         |
| Outer    | 2009 | 332_09LTM | 2   | Cirrophorus Furcatus     | 3         |
| Outer    | 2009 | 332_09LTM | 1   | Clymenella Torquata      | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Crepidula Fornicata      | 5         |
| Outer    | 2009 | 332_09LTM | 2   | Crepidula Fornicata      | 18        |
| Outer    | 2009 | 332_09LTM | 1   | Crepidula Plana          | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Crepidula Plana          | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Crepidula Sp.            | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Cylichna Oryza           | 17        |
| Outer    | 2009 | 332_09LTM | 2   | Cylichna Oryza           | 6         |
| Outer    | 2009 | 332_09LTM | 1   | Dipolydora Socialis      | 4         |
| Outer    | 2009 | 332_09LTM | 2   | Dipolydora Socialis      | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Dyspanopeus Sayi         | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Dyspanopeus Sayi         | 3         |
| Outer    | 2009 | 332_09LTM | 2   | Ericthonius Brasiliensis | 5         |
| Outer    | 2009 | 332_09LTM | 1   | Euclymene Collaris       | 11        |
| Outer    | 2009 | 332_09LTM | 2   | Euclymene Collaris       | 8         |
| Outer    | 2009 | 332_09LTM | 1   | Eumida Sanguinea         | 5         |
| Outer    | 2009 | 332_09LTM | 2   | Eumida Sanguinea         | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Exogone Dispar           | 6         |
| Outer    | 2009 | 332_09LTM | 2   | Exogone Dispar           | 8         |
| Outer    | 2009 | 332_09LTM | 1   | Exogone Sp.              | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Gastropoda               | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Glycera Dibranchiata     | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Glycera Sp.              | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Haloclava Producta       | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Harpacticoida            | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Heteromysis Formosa      | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Hippolyte Sp.            | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Leitoscoloplos Fragilis  | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Leptocheirus Pinguis     | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Macoma Tenta             | 6         |
| Outer    | 2009 | 332_09LTM | 2   | Margarites Sp.           | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Mediomastus Ambiseta     | 30        |
| Outer    | 2009 | 332_09LTM | 2   | Mediomastus Ambiseta     | 34        |
| Outer    | 2009 | 332_09LTM | 1   | Melinna Cristata         | 4         |
| Outer    | 2009 | 332_09LTM | 2   | Melinna Cristata         | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Microphthalmus Sp.       | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Mitrella Lunata          | 7         |
| Outer    | 2009 | 332_09LTM | 2   | Mitrella Lunata          | 16        |
| Outer    | 2009 | 332_09LTM | 1   | Nematoda                 | P         |
| Outer    | 2009 | 332_09LTM | 2   | Nematoda                 | P         |
| Outer    | 2009 | 332_09LTM | 1   | Nephtys Incisa           | 5         |
| Outer    | 2009 | 332_09LTM | 2   | Nephtys Incisa           | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Ninoe Nigripes           | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 332_09LTM | 2   | Ninoe Nigripes                 | 3         |
| Outer    | 2009 | 332_09LTM | 1   | Notomastus Latericeus          | 8         |
| Outer    | 2009 | 332_09LTM | 2   | Notomastus Latericeus          | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Nucula Proxima                 | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Oligochaeta                    | 80        |
| Outer    | 2009 | 332_09LTM | 2   | Oligochaeta                    | 53        |
| Outer    | 2009 | 332_09LTM | 2   | Ophiuroidea                    | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Ostracoda                      | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Ostracoda                      | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Oxyurostylis Smithi            | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Pagurus Annulipes              | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Paracaprella Tenuis            | 3         |
| Outer    | 2009 | 332_09LTM | 2   | Paracaprella Tenuis            | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Parapionosyllis Longicirrata   | 7         |
| Outer    | 2009 | 332_09LTM | 2   | Parapionosyllis Longicirrata   | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Parougia Caeca                 | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Parougia Caeca                 | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Pholoe Minuta                  | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Phyllodoce Arenae              | 4         |
| Outer    | 2009 | 332_09LTM | 2   | Phyllodoce Arenae              | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Pinnixa Chaetoptera            | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Platynereis Dumerilii          | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Polycirrus Eximius             | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Polycirrus Sp.                 | 4         |
| Outer    | 2009 | 332_09LTM | 2   | Polycirrus Sp.                 | 3         |
| Outer    | 2009 | 332_09LTM | 1   | Polygordius Sp.                | 4         |
| Outer    | 2009 | 332_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 8         |
| Outer    | 2009 | 332_09LTM | 1   | Protodorvillea Gaspeensis      | 8         |
| Outer    | 2009 | 332_09LTM | 2   | Protodorvillea Gaspeensis      | 3         |
| Outer    | 2009 | 332_09LTM | 1   | Scalibregma Inflatum           | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Seila Adamsi                   | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Sphaerosyllis Longicauda       | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Sphaerosyllis Longicauda       | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Sphaerosyllis Taylori          | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Spiochaetopterus Oculatus      | 4         |
| Outer    | 2009 | 332_09LTM | 2   | Spiochaetopterus Oculatus      | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Spiophanes Bombyx              | 5         |
| Outer    | 2009 | 332_09LTM | 2   | Spiophanes Bombyx              | 8         |
| Outer    | 2009 | 332_09LTM | 2   | Sthenelais Boa                 | 2         |
| Outer    | 2009 | 332_09LTM | 1   | Stylochus Ellipticus           | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Tagelus Divisus                | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Tagelus Divisus                | 3         |
| Outer    | 2009 | 332_09LTM | 1   | Tectonatica Pusilla            | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Tellina Agilis                 | 6         |
| Outer    | 2009 | 332_09LTM | 2   | Tellina Agilis                 | 17        |
| Outer    | 2009 | 332_09LTM | 2   | Tellinidae                     | 13        |
| Outer    | 2009 | 332_09LTM | 1   | Tharyx Acutus                  | 14        |
| Outer    | 2009 | 332_09LTM | 2   | Tharyx Acutus                  | 53        |
| Outer    | 2009 | 332_09LTM | 1   | Thyasira Gouldii               | 1         |
| Outer    | 2009 | 332_09LTM | 1   | Tubulanus Sp.                  | 2         |
| Outer    | 2009 | 332_09LTM | 2   | Tubulanus Sp.                  | 4         |
| Outer    | 2009 | 332_09LTM | 1   | Turbonilla Elegantula          | 4         |
| Outer    | 2009 | 332_09LTM | 2   | Turbonilla Elegantula          | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Turbonilla Interrupta          | 9         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Outer    | 2009 | 332_09LTM | 1   | Unciola Irrorata                     | 1         |
| Outer    | 2009 | 332_09LTM | 2   | Zaops Ostreum                        | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Acteocina Canaliculata               | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Amphiporus Cruentatus                | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Amphiporus Sp.                       | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Ampithoe Longimana                   | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Anachis Lafresnayi                   | 21        |
| Outer    | 2009 | 333_09LTM | 2   | Anachis Lafresnayi                   | 18        |
| Outer    | 2009 | 333_09LTM | 1   | Anadara Transversa                   | 10        |
| Outer    | 2009 | 333_09LTM | 2   | Anadara Transversa                   | 5         |
| Outer    | 2009 | 333_09LTM | 1   | Ancistrosyllis Hartmanae             | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Anomia Simplex                       | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Anomia Simplex                       | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Arabella Iricolor                    | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Aricidea (Acmira) Catherinae         | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Balanus Venustus                     | 16        |
| Outer    | 2009 | 333_09LTM | 2   | Balanus Venustus                     | 6         |
| Outer    | 2009 | 333_09LTM | 1   | Batea Catharinensis                  | 11        |
| Outer    | 2009 | 333_09LTM | 2   | Batea Catharinensis                  | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Bittium Alternatum                   | 5         |
| Outer    | 2009 | 333_09LTM | 2   | Bittium Alternatum                   | 19        |
| Outer    | 2009 | 333_09LTM | 1   | Boonea Seminuda                      | 4         |
| Outer    | 2009 | 333_09LTM | 2   | Boonea Seminuda                      | 5         |
| Outer    | 2009 | 333_09LTM | 1   | Brania Clavata                       | 11        |
| Outer    | 2009 | 333_09LTM | 2   | Brania Clavata                       | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Caprella Penantis                    | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Carazziella Hobsonae                 | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Carazziella Hobsonae                 | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Chaetopleura Apiculata               | 5         |
| Outer    | 2009 | 333_09LTM | 2   | Chaetopleura Apiculata               | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Cirratulidae                         | 180       |
| Outer    | 2009 | 333_09LTM | 2   | Cirratulidae                         | 411       |
| Outer    | 2009 | 333_09LTM | 2   | Cliona Vastifica                     | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Crassinella Lunulata                 | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Crepidula Fornicata                  | 161       |
| Outer    | 2009 | 333_09LTM | 2   | Crepidula Fornicata                  | 80        |
| Outer    | 2009 | 333_09LTM | 1   | Crepidula Plana                      | 39        |
| Outer    | 2009 | 333_09LTM | 2   | Crepidula Plana                      | 54        |
| Outer    | 2009 | 333_09LTM | 2   | Cumingia Tellinoides                 | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Dipolydora Socialis                  | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Dorvillea (Schistomeringos) Annulata | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Drilonereis Longa                    | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Dyspanopeus Sayi                     | 36        |
| Outer    | 2009 | 333_09LTM | 2   | Dyspanopeus Sayi                     | 41        |
| Outer    | 2009 | 333_09LTM | 1   | Eumida Sanguinea                     | 5         |
| Outer    | 2009 | 333_09LTM | 2   | Eumida Sanguinea                     | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Eunicidae                            | 3         |
| Outer    | 2009 | 333_09LTM | 2   | Eunicidae                            | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Exogone Dispar                       | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Exogone Dispar                       | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Gastropoda                           | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Glycera Americana                    | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Glycera Americana                    | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Gyptis Vittata                       | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Harmothoe Extenuata                  | 9         |
| Outer    | 2009 | 333_09LTM | 2   | Harmothoe Extenuata                  | 10        |
| Outer    | 2009 | 333_09LTM | 1   | Harmothoe Imbricata                  | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Heteromastus Filiformis              | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Heteromastus Filiformis              | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 333_09LTM | 1   | Heteromysis Formosa            | 100       |
| Outer    | 2009 | 333_09LTM | 2   | Heteromysis Formosa            | 45        |
| Outer    | 2009 | 333_09LTM | 1   | Hexapanopeus Angustifrons      | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Hexapanopeus Angustifrons      | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Ianiropsis Sp. 1               | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Ianiropsis Sp. 1               | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Lembos Smithi                  | 32        |
| Outer    | 2009 | 333_09LTM | 2   | Lembos Smithi                  | 65        |
| Outer    | 2009 | 333_09LTM | 1   | Lepidonotus Squamatus          | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Lepidonotus Squamatus          | 3         |
| Outer    | 2009 | 333_09LTM | 2   | Leptocheilia Dubia             | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Marphysa Sanguinea             | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Mediomastus Ambiseta           | 6         |
| Outer    | 2009 | 333_09LTM | 1   | Melanella Conoidea             | 4         |
| Outer    | 2009 | 333_09LTM | 1   | Melanella Oleacea              | 5         |
| Outer    | 2009 | 333_09LTM | 2   | Microdeutopus Anomalus         | 3         |
| Outer    | 2009 | 333_09LTM | 1   | Mitrella Lunata                | 13        |
| Outer    | 2009 | 333_09LTM | 2   | Mitrella Lunata                | 25        |
| Outer    | 2009 | 333_09LTM | 1   | Monocorophium Acherusicum      | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Monocorophium Acherusicum      | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Monticellina Dorsobranchialis  | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Monticellina Dorsobranchialis  | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 333_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 333_09LTM | 1   | Nephtys Incisa                 | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Nucula Annulata                | 4         |
| Outer    | 2009 | 333_09LTM | 2   | Nucula Annulata                | 4         |
| Outer    | 2009 | 333_09LTM | 2   | Nucula Proxima                 | 4         |
| Outer    | 2009 | 333_09LTM | 1   | Odontosyllis Fulgurans         | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Odontosyllis Fulgurans         | 2         |
| Outer    | 2009 | 333_09LTM | 1   | Oligochaeta                    | 91        |
| Outer    | 2009 | 333_09LTM | 2   | Oligochaeta                    | 85        |
| Outer    | 2009 | 333_09LTM | 2   | Ophiuroidea                    | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Pagurus Annulipes              | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Pagurus Annulipes              | 3         |
| Outer    | 2009 | 333_09LTM | 2   | Pilargidae                     | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Podarke Obscura                | 9         |
| Outer    | 2009 | 333_09LTM | 2   | Podarke Obscura                | 9         |
| Outer    | 2009 | 333_09LTM | 1   | Polycirrus Eximius             | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Polycirrus Sp.                 | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 10        |
| Outer    | 2009 | 333_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 3         |
| Outer    | 2009 | 333_09LTM | 1   | Sclerodactyla Briareus         | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Seila Adamsi                   | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Seila Adamsi                   | 4         |
| Outer    | 2009 | 333_09LTM | 1   | Sphaerosyllis Longicauda       | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Sphaerosyllis Longicauda       | 3         |
| Outer    | 2009 | 333_09LTM | 1   | Sphaerosyllis Taylori          | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Spiophanes Bombyx              | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Tharyx Acutus                  | 656       |
| Outer    | 2009 | 333_09LTM | 2   | Tharyx Acutus                  | 619       |
| Outer    | 2009 | 333_09LTM | 2   | Tubulanus Sp.                  | 4         |
| Outer    | 2009 | 333_09LTM | 1   | Turbonilla Aequalis            | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Turbonilla Aequalis            | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Turbonilla Interrupta          | 2         |
| Outer    | 2009 | 333_09LTM | 2   | Urosalpinx Cinerea             | 1         |
| Outer    | 2009 | 333_09LTM | 1   | Zygonemertes Virescens         | 1         |
| Outer    | 2009 | 333_09LTM | 2   | Zygonemertes Virescens         | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Outer    | 2009 | 334_09LTM | 1   | Acteocina Canaliculata               | 11        |
| Outer    | 2009 | 334_09LTM | 2   | Acteocina Canaliculata               | 14        |
| Outer    | 2009 | 334_09LTM | 2   | Ampelisca Verrilli                   | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Aricidea (Acmira) Catherinae         | 3         |
| Outer    | 2009 | 334_09LTM | 2   | Aricidea (Acmira) Catherinae         | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Aricidea (Acmira) Cerruti            | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Bivalvia                             | 6         |
| Outer    | 2009 | 334_09LTM | 2   | Bivalvia                             | 20        |
| Outer    | 2009 | 334_09LTM | 1   | Cerastoderma Pinnulatum              | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Cerastoderma Pinnulatum              | 3         |
| Outer    | 2009 | 334_09LTM | 2   | Chaetozone Sp.                       | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Cirrophorus Furcatus                 | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Clymenella Torquata                  | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Cylichna Oryza                       | 35        |
| Outer    | 2009 | 334_09LTM | 2   | Cylichna Oryza                       | 94        |
| Outer    | 2009 | 334_09LTM | 2   | Dipolydora Socialis                  | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Edwardsia Elegans                    | 3         |
| Outer    | 2009 | 334_09LTM | 2   | Edwardsia Elegans                    | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Euclymene Collaris                   | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Euclymene Collaris                   | 3         |
| Outer    | 2009 | 334_09LTM | 1   | Eupleura Caudata                     | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Gyptis Vittata                       | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Hutchinsoniella Macracantha          | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Ilyanassa Trivittata                 | 3         |
| Outer    | 2009 | 334_09LTM | 2   | Ilyanassa Trivittata                 | 5         |
| Outer    | 2009 | 334_09LTM | 1   | Kurtziella Cerina                    | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Lumbrineridae                        | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Lyonsia Hyalina                      | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Lyonsia Hyalina                      | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Macoma Tenta                         | 73        |
| Outer    | 2009 | 334_09LTM | 2   | Macoma Tenta                         | 149       |
| Outer    | 2009 | 334_09LTM | 1   | Maldane Sarsi                        | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Maldane Sarsi                        | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Mediomastus Ambiseta                 | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Mediomastus Ambiseta                 | 9         |
| Outer    | 2009 | 334_09LTM | 1   | Melinna Cristata                     | 3         |
| Outer    | 2009 | 334_09LTM | 2   | Melinna Cristata                     | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Mitrella Lunata                      | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Mitrella Lunata                      | 9         |
| Outer    | 2009 | 334_09LTM | 1   | Monticellina Dorsobranchialis        | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Monticellina Dorsobranchialis        | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Mulinia Lateralis                    | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Mulinia Lateralis                    | 6         |
| Outer    | 2009 | 334_09LTM | 1   | Nematoda                             | P         |
| Outer    | 2009 | 334_09LTM | 2   | Nematoda                             | P         |
| Outer    | 2009 | 334_09LTM | 1   | Nephtys Incisa                       | 47        |
| Outer    | 2009 | 334_09LTM | 2   | Nephtys Incisa                       | 51        |
| Outer    | 2009 | 334_09LTM | 1   | Ninoe Nigripes                       | 5         |
| Outer    | 2009 | 334_09LTM | 2   | Ninoe Nigripes                       | 14        |
| Outer    | 2009 | 334_09LTM | 1   | Nucula Annulata                      | 11        |
| Outer    | 2009 | 334_09LTM | 2   | Nucula Annulata                      | 9         |
| Outer    | 2009 | 334_09LTM | 2   | Oligochaeta                          | 5         |
| Outer    | 2009 | 334_09LTM | 1   | Ophiuroidea                          | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Ostracoda                            | 14        |
| Outer    | 2009 | 334_09LTM | 2   | Ostracoda                            | 8         |
| Outer    | 2009 | 334_09LTM | 1   | Parougia Caeca                       | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Parougia Caeca                       | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Pectinaria Gouldi                    | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 334_09LTM | 2   | Pectinaria Gouldi              | 3         |
| Outer    | 2009 | 334_09LTM | 1   | Pholoe Minuta                  | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Pinnixa Sayana                 | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Pitar Morrhuanus               | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Pitar Morrhuanus               | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Polycirrus Eximius             | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Polycirrus Sp.                 | 6         |
| Outer    | 2009 | 334_09LTM | 2   | Polycirrus Sp.                 | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Polyonyx Gibbesi               | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 6         |
| Outer    | 2009 | 334_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 4         |
| Outer    | 2009 | 334_09LTM | 2   | Saccoglossus Kowalevskii       | 9         |
| Outer    | 2009 | 334_09LTM | 2   | Saccoglossus Kowalevskii       | 6         |
| Outer    | 2009 | 334_09LTM | 2   | Scolecipis Bousfieldi          | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Scolecipis Sp.                 | 3         |
| Outer    | 2009 | 334_09LTM | 1   | Scolecipis Texana              | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Spiochaetopterus Oculatus      | 3         |
| Outer    | 2009 | 334_09LTM | 2   | Spiochaetopterus Oculatus      | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Tectonatica Pusilla            | 3         |
| Outer    | 2009 | 334_09LTM | 1   | Tellina Agilis                 | 9         |
| Outer    | 2009 | 334_09LTM | 2   | Tellina Agilis                 | 3         |
| Outer    | 2009 | 334_09LTM | 1   | Tellinidae                     | 37        |
| Outer    | 2009 | 334_09LTM | 2   | Tellinidae                     | 42        |
| Outer    | 2009 | 334_09LTM | 2   | Tharyx Acutus                  | 1         |
| Outer    | 2009 | 334_09LTM | 2   | Tubulanus Sp.                  | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Tubulanus Sp.                  | 1         |
| Outer    | 2009 | 334_09LTM | 1   | Turbonilla Interrupta          | 3         |
| Outer    | 2009 | 334_09LTM | 2   | Turbonilla Interrupta          | 2         |
| Outer    | 2009 | 334_09LTM | 1   | Yoldia Sp.                     | 2         |
| Outer    | 2009 | 334_09LTM | 2   | Yoldia Sp.                     | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Amphiporus Bioculatus          | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Amphiporus Cruentatus          | 2         |
| Outer    | 2009 | 335_09LTM | 2   | Amphiporus Cruentatus          | 2         |
| Outer    | 2009 | 335_09LTM | 1   | Anachis Lafresnayi             | 5         |
| Outer    | 2009 | 335_09LTM | 2   | Anachis Lafresnayi             | 10        |
| Outer    | 2009 | 335_09LTM | 2   | Anadara Transversa             | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Ancistrosyllis Hartmanae       | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Anomia Simplex                 | 4         |
| Outer    | 2009 | 335_09LTM | 2   | Anomia Simplex                 | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Anomia Sp.                     | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Arabella Iricolor              | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Balanus Venustus               | 28        |
| Outer    | 2009 | 335_09LTM | 2   | Balanus Venustus               | 47        |
| Outer    | 2009 | 335_09LTM | 1   | Batea Catharinensis            | 1         |
| Outer    | 2009 | 335_09LTM | 2   | Batea Catharinensis            | 34        |
| Outer    | 2009 | 335_09LTM | 1   | Boccardiella Hamata            | 2         |
| Outer    | 2009 | 335_09LTM | 2   | Boccardiella Hamata            | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Boonea Seminuda                | 47        |
| Outer    | 2009 | 335_09LTM | 2   | Boonea Seminuda                | 32        |
| Outer    | 2009 | 335_09LTM | 1   | Brania Clavata                 | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Chaetopleura Apiculata         | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Cirratulidae                   | 229       |
| Outer    | 2009 | 335_09LTM | 2   | Cirratulidae                   | 284       |
| Outer    | 2009 | 335_09LTM | 2   | Cirrophorus Furcatus           | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Cliona Celata                  | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Cliona Vastifica               | 10        |
| Outer    | 2009 | 335_09LTM | 2   | Cliona Vastifica               | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                      | Abundance |
|----------|------|-----------|-----|--------------------------------------|-----------|
| Outer    | 2009 | 335_09LTM | 1   | Crepidula Fornicata                  | 132       |
| Outer    | 2009 | 335_09LTM | 2   | Crepidula Fornicata                  | 127       |
| Outer    | 2009 | 335_09LTM | 1   | Crepidula Plana                      | 8         |
| Outer    | 2009 | 335_09LTM | 2   | Crepidula Plana                      | 11        |
| Outer    | 2009 | 335_09LTM | 1   | Cylichna Oryza                       | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Dipolydora Giardi                    | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Dipolydora Socialis                  | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Dorvillea (Schistomeringos) Annulata | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Dyspanopeus Sayi                     | 19        |
| Outer    | 2009 | 335_09LTM | 2   | Dyspanopeus Sayi                     | 25        |
| Outer    | 2009 | 335_09LTM | 2   | Ericthonius Brasiliensis             | 2         |
| Outer    | 2009 | 335_09LTM | 1   | Eumida Sanguinea                     | 12        |
| Outer    | 2009 | 335_09LTM | 2   | Eumida Sanguinea                     | 9         |
| Outer    | 2009 | 335_09LTM | 1   | Exogone Dispar                       | 16        |
| Outer    | 2009 | 335_09LTM | 2   | Exogone Dispar                       | 8         |
| Outer    | 2009 | 335_09LTM | 2   | Glycera Americana                    | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Glycinde Solitaria                   | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Harmothoe Extenuata                  | 5         |
| Outer    | 2009 | 335_09LTM | 2   | Harmothoe Extenuata                  | 2         |
| Outer    | 2009 | 335_09LTM | 1   | Harmothoe Imbricata                  | 1         |
| Outer    | 2009 | 335_09LTM | 2   | Harmothoe Imbricata                  | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Heteromastus Filiformis              | 1         |
| Outer    | 2009 | 335_09LTM | 2   | Heteromastus Filiformis              | 2         |
| Outer    | 2009 | 335_09LTM | 1   | Heteromysis Formosa                  | 30        |
| Outer    | 2009 | 335_09LTM | 2   | Heteromysis Formosa                  | 56        |
| Outer    | 2009 | 335_09LTM | 2   | Ianiropsis Sp. 1                     | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Lembos Smithi                        | 26        |
| Outer    | 2009 | 335_09LTM | 2   | Lembos Smithi                        | 17        |
| Outer    | 2009 | 335_09LTM | 1   | Lepidonotus Squamatus                | 3         |
| Outer    | 2009 | 335_09LTM | 2   | Lepidonotus Squamatus                | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Mediomastus Ambiseta                 | 10        |
| Outer    | 2009 | 335_09LTM | 2   | Mediomastus Ambiseta                 | 11        |
| Outer    | 2009 | 335_09LTM | 2   | Microdeutopus Anomalus               | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Mitrella Lunata                      | 9         |
| Outer    | 2009 | 335_09LTM | 2   | Mitrella Lunata                      | 12        |
| Outer    | 2009 | 335_09LTM | 1   | Monocorophium Acherusicum            | 2         |
| Outer    | 2009 | 335_09LTM | 2   | Monocorophium Acherusicum            | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Nematoda                             | P         |
| Outer    | 2009 | 335_09LTM | 2   | Nematoda                             | P         |
| Outer    | 2009 | 335_09LTM | 2   | Nephtys Incisa                       | 2         |
| Outer    | 2009 | 335_09LTM | 1   | Nucula Annulata                      | 6         |
| Outer    | 2009 | 335_09LTM | 2   | Nucula Proxima                       | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Oligochaeta                          | 45        |
| Outer    | 2009 | 335_09LTM | 2   | Oligochaeta                          | 39        |
| Outer    | 2009 | 335_09LTM | 2   | Ostracoda                            | 4         |
| Outer    | 2009 | 335_09LTM | 2   | Pagurus Annulipes                    | 2         |
| Outer    | 2009 | 335_09LTM | 2   | Pinnixa Chaetoptera                  | 1         |
| Outer    | 2009 | 335_09LTM | 2   | Pionosyllis Sp.                      | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Podarke Obscura                      | 3         |
| Outer    | 2009 | 335_09LTM | 2   | Podarke Obscura                      | 3         |
| Outer    | 2009 | 335_09LTM | 2   | Polygordius Sp.                      | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Prionospio (Minuspio) Perkinsi       | 1         |
| Outer    | 2009 | 335_09LTM | 2   | Prionospio (Minuspio) Perkinsi       | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Seila Adamsi                         | 7         |
| Outer    | 2009 | 335_09LTM | 2   | Seila Adamsi                         | 3         |
| Outer    | 2009 | 335_09LTM | 1   | Sphaerosyllis Longicauda             | 1         |
| Outer    | 2009 | 335_09LTM | 2   | Sphaerosyllis Longicauda             | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Tharyx Acutus                        | 387       |
| Outer    | 2009 | 335_09LTM | 2   | Tharyx Acutus                        | 561       |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Outer    | 2009 | 335_09LTM | 2   | Turbonilla Aequalis           | 1         |
| Outer    | 2009 | 335_09LTM | 1   | Turbonilla Interrupta         | 12        |
| Outer    | 2009 | 335_09LTM | 2   | Turbonilla Interrupta         | 2         |
| Outer    | 2009 | 338_09LTM | 1   | Acteocina Canaliculata        | 41        |
| Outer    | 2009 | 338_09LTM | 2   | Acteocina Canaliculata        | 120       |
| Outer    | 2009 | 338_09LTM | 1   | Ampelisca Abdita              | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Ampelisca Abdita              | 5         |
| Outer    | 2009 | 338_09LTM | 2   | Amphiporus Bioculatus         | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Anachis Lafresnayi            | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Arabella Iricolor             | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Aricidea (Acmira) Catherinae  | 5         |
| Outer    | 2009 | 338_09LTM | 2   | Bivalvia                      | 2         |
| Outer    | 2009 | 338_09LTM | 1   | Cerastoderma Pinnulatum       | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Cerastoderma Pinnulatum       | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Ceriantharia                  | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Cirrophorus Furcatus          | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Coryphella Sp.                | 2         |
| Outer    | 2009 | 338_09LTM | 1   | Cylichna Oryza                | 117       |
| Outer    | 2009 | 338_09LTM | 2   | Cylichna Oryza                | 275       |
| Outer    | 2009 | 338_09LTM | 1   | Dipolydora Socialis           | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Edwardsia Elegans             | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Edwardsia Elegans             | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Epitomapta Roseola            | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Euclymene Collaris            | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Eupleura Caudata              | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Gyptis Vittata                | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Gyptis Vittata                | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Haminoea Solitaria            | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Ilyanassa Trivittata          | 3         |
| Outer    | 2009 | 338_09LTM | 1   | Kurtziella Cerina             | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Kurtziella Cerina             | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Macoma Tenta                  | 32        |
| Outer    | 2009 | 338_09LTM | 2   | Macoma Tenta                  | 140       |
| Outer    | 2009 | 338_09LTM | 2   | Maldane Sarsi                 | 3         |
| Outer    | 2009 | 338_09LTM | 1   | Mediomastus Ambiseta          | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Mediomastus Ambiseta          | 10        |
| Outer    | 2009 | 338_09LTM | 2   | Melinna Cristata              | 9         |
| Outer    | 2009 | 338_09LTM | 1   | Monticellina Dorsobranchialis | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Mulinia Lateralis             | 5         |
| Outer    | 2009 | 338_09LTM | 2   | Mulinia Lateralis             | 13        |
| Outer    | 2009 | 338_09LTM | 1   | Nematoda                      | P         |
| Outer    | 2009 | 338_09LTM | 2   | Nematoda                      | P         |
| Outer    | 2009 | 338_09LTM | 1   | Nephtys Incisa                | 32        |
| Outer    | 2009 | 338_09LTM | 2   | Nephtys Incisa                | 41        |
| Outer    | 2009 | 338_09LTM | 1   | Ninoe Nigripes                | 3         |
| Outer    | 2009 | 338_09LTM | 2   | Ninoe Nigripes                | 3         |
| Outer    | 2009 | 338_09LTM | 1   | Nucula Annulata               | 11        |
| Outer    | 2009 | 338_09LTM | 2   | Nucula Annulata               | 17        |
| Outer    | 2009 | 338_09LTM | 2   | Odostomia Eburnea             | 3         |
| Outer    | 2009 | 338_09LTM | 2   | Oligochaeta                   | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Ostracoda                     | 99        |
| Outer    | 2009 | 338_09LTM | 2   | Ostracoda                     | 89        |
| Outer    | 2009 | 338_09LTM | 2   | Ostracoda                     | 151       |
| Outer    | 2009 | 338_09LTM | 2   | Oxyurostylis Smithi           | 2         |
| Outer    | 2009 | 338_09LTM | 1   | Parougia Caeca                | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Pectinaria Gouldi             | 3         |
| Outer    | 2009 | 338_09LTM | 2   | Pectinaria Gouldi             | 10        |
| Outer    | 2009 | 338_09LTM | 1   | Phyllodoce Arenae             | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Phyllodoce Arenae             | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 338_09LTM | 1   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Pitar Morrhuanus               | 3         |
| Outer    | 2009 | 338_09LTM | 1   | Polycirrus Eximius             | 2         |
| Outer    | 2009 | 338_09LTM | 1   | Polycirrus Sp.                 | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Polycirrus Sp.                 | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 13        |
| Outer    | 2009 | 338_09LTM | 1   | Rictaxis Punctostriatus        | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Rictaxis Punctostriatus        | 5         |
| Outer    | 2009 | 338_09LTM | 1   | Saccoglossus Kowalevskii       | 10        |
| Outer    | 2009 | 338_09LTM | 2   | Saccoglossus Kowalevskii       | 9         |
| Outer    | 2009 | 338_09LTM | 1   | Spiochaetopterus Oculatus      | 3         |
| Outer    | 2009 | 338_09LTM | 2   | Spiochaetopterus Oculatus      | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Stylochus Ellipticus           | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Stylochus Ellipticus           | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Tellina Agilis                 | 3         |
| Outer    | 2009 | 338_09LTM | 1   | Tellinidae                     | 14        |
| Outer    | 2009 | 338_09LTM | 2   | Tellinidae                     | 61        |
| Outer    | 2009 | 338_09LTM | 1   | Tharyx Acutus                  | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Tharyx Acutus                  | 5         |
| Outer    | 2009 | 338_09LTM | 1   | Tubulanus Sp.                  | 2         |
| Outer    | 2009 | 338_09LTM | 2   | Tubulanus Sp.                  | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Turbonilla Aequalis            | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Turbonilla Elegantula          | 16        |
| Outer    | 2009 | 338_09LTM | 1   | Turbonilla Interrupta          | 8         |
| Outer    | 2009 | 338_09LTM | 2   | Turbonilla Interrupta          | 8         |
| Outer    | 2009 | 338_09LTM | 1   | Yoldia Limatula                | 1         |
| Outer    | 2009 | 338_09LTM | 1   | Yoldia Sp.                     | 1         |
| Outer    | 2009 | 338_09LTM | 2   | Yoldia Sp.                     | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Acteocina Canaliculata         | 16        |
| Outer    | 2009 | 339_09LTM | 2   | Acteocina Canaliculata         | 21        |
| Outer    | 2009 | 339_09LTM | 1   | Ampelisca Abdita               | 6         |
| Outer    | 2009 | 339_09LTM | 1   | Ampelisca Vadorum              | 3         |
| Outer    | 2009 | 339_09LTM | 2   | Anadara Transversa             | 2         |
| Outer    | 2009 | 339_09LTM | 2   | Aricidea (Acmira) Catherinae   | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Batea Catharinensis            | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Cerastoderma Pinnulatum        | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Cylichna Oryza                 | 132       |
| Outer    | 2009 | 339_09LTM | 2   | Cylichna Oryza                 | 214       |
| Outer    | 2009 | 339_09LTM | 2   | Diopatra Cuprea                | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Dyspanopeus Sayi               | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Edwardsia Elegans              | 3         |
| Outer    | 2009 | 339_09LTM | 1   | Ericthonius Brasiliensis       | 7         |
| Outer    | 2009 | 339_09LTM | 2   | Ericthonius Brasiliensis       | 3         |
| Outer    | 2009 | 339_09LTM | 2   | Eumida Sanguinea               | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Gyptis Vittata                 | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Hippolyte Sp.                  | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Hutchinsoniella Macracantha    | 5         |
| Outer    | 2009 | 339_09LTM | 2   | Ilyanassa Trivittata           | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Kurtziella Cerina              | 2         |
| Outer    | 2009 | 339_09LTM | 1   | Lyonsia Hyalina                | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Lyonsia Hyalina                | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Macoma Tenta                   | 134       |
| Outer    | 2009 | 339_09LTM | 2   | Macoma Tenta                   | 187       |
| Outer    | 2009 | 339_09LTM | 1   | Maldane Sarsi                  | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Maldane Sarsi                  | 2         |
| Outer    | 2009 | 339_09LTM | 1   | Mediomastus Ambiseta           | 4         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 339_09LTM | 2   | Mediomastus Ambiseta           | 15        |
| Outer    | 2009 | 339_09LTM | 1   | Melinna Cristata               | 3         |
| Outer    | 2009 | 339_09LTM | 2   | Melinna Cristata               | 2         |
| Outer    | 2009 | 339_09LTM | 1   | Mitrella Lunata                | 2         |
| Outer    | 2009 | 339_09LTM | 2   | Mitrella Lunata                | 16        |
| Outer    | 2009 | 339_09LTM | 1   | Monticellina Dorsobranchialis  | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Mulinia Lateralis              | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 339_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 339_09LTM | 1   | Nephtys Incisa                 | 57        |
| Outer    | 2009 | 339_09LTM | 2   | Nephtys Incisa                 | 59        |
| Outer    | 2009 | 339_09LTM | 2   | Ninoe Nigripes                 | 2         |
| Outer    | 2009 | 339_09LTM | 1   | Nucula Annulata                | 30        |
| Outer    | 2009 | 339_09LTM | 1   | Nucula Annulata                | 29        |
| Outer    | 2009 | 339_09LTM | 2   | Odostomia Striata              | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Oligochaeta                    | 2         |
| Outer    | 2009 | 339_09LTM | 1   | Ostracoda                      | 5         |
| Outer    | 2009 | 339_09LTM | 2   | Ostracoda                      | 13        |
| Outer    | 2009 | 339_09LTM | 2   | Oweniidae                      | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Pagurus Annulipes              | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Parougia Caeca                 | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Pectinaria Gouldi              | 2         |
| Outer    | 2009 | 339_09LTM | 2   | Pholoe Minuta                  | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Phyllodoce Arenae              | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Pitar Morrhuanus               | 2         |
| Outer    | 2009 | 339_09LTM | 2   | Pitar Morrhuanus               | 3         |
| Outer    | 2009 | 339_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 5         |
| Outer    | 2009 | 339_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 7         |
| Outer    | 2009 | 339_09LTM | 1   | Rictaxis Punctostriatus        | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Rictaxis Punctostriatus        | 3         |
| Outer    | 2009 | 339_09LTM | 2   | Sabellaria Vulgaris            | 2         |
| Outer    | 2009 | 339_09LTM | 1   | Saccoglossus Kowalevskii       | 12        |
| Outer    | 2009 | 339_09LTM | 2   | Saccoglossus Kowalevskii       | 21        |
| Outer    | 2009 | 339_09LTM | 1   | Scolecopsis Bousfieldi         | 4         |
| Outer    | 2009 | 339_09LTM | 2   | Scolecopsis Bousfieldi         | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Spiochaetopterus Oculatus      | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Spiochaetopterus Oculatus      | 4         |
| Outer    | 2009 | 339_09LTM | 2   | Stylochus Ellipticus           | 4         |
| Outer    | 2009 | 339_09LTM | 1   | Tectonatica Pusilla            | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Tectonatica Pusilla            | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Tellina Agilis                 | 3         |
| Outer    | 2009 | 339_09LTM | 2   | Tellina Agilis                 | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Tellinidae                     | 34        |
| Outer    | 2009 | 339_09LTM | 2   | Tellinidae                     | 44        |
| Outer    | 2009 | 339_09LTM | 1   | Tharyx Acutus                  | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Tharyx Acutus                  | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Tubulanus Sp.                  | 3         |
| Outer    | 2009 | 339_09LTM | 2   | Tubulanus Sp.                  | 3         |
| Outer    | 2009 | 339_09LTM | 2   | Turbonilla Interrupta          | 7         |
| Outer    | 2009 | 339_09LTM | 1   | Yoldia Limatula                | 1         |
| Outer    | 2009 | 339_09LTM | 2   | Yoldia Limatula                | 1         |
| Outer    | 2009 | 339_09LTM | 1   | Yoldia Sp.                     | 2         |
| Outer    | 2009 | 339_09LTM | 2   | Yoldia Sp.                     | 5         |
| Outer    | 2009 | 340_09LTM | 1   | Acteocina Canaliculata         | 9         |
| Outer    | 2009 | 340_09LTM | 2   | Acteocina Canaliculata         | 12        |
| Outer    | 2009 | 340_09LTM | 1   | Ampelisca Abdita               | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Ampelisca Abdita               | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Ampelisca Verrilli             | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Amphiporus Bioculatus          | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 340_09LTM | 2   | Amphiporus Bioculatus          | 2         |
| Outer    | 2009 | 340_09LTM | 1   | Aricidea (Acmira) Catherinae   | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Aricidea (Acmira) Catherinae   | 9         |
| Outer    | 2009 | 340_09LTM | 1   | Bivalvia                       | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Cirratulidae                   | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Cirrophorus Furcatus           | 2         |
| Outer    | 2009 | 340_09LTM | 1   | Cylichna Oryza                 | 65        |
| Outer    | 2009 | 340_09LTM | 2   | Cylichna Oryza                 | 119       |
| Outer    | 2009 | 340_09LTM | 2   | Diopatra Cuprea                | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Edwardsia Elegans              | 4         |
| Outer    | 2009 | 340_09LTM | 2   | Ericthonius Brasiliensis       | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Haloclava Producta             | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Hutchinsoniella Macracantha    | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Hutchinsoniella Macracantha    | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Levinsenia Gracilis            | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Lineus Ruber                   | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Lyonsia Hyalina                | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Lyonsia Hyalina                | 2         |
| Outer    | 2009 | 340_09LTM | 1   | Macoma Tenta                   | 360       |
| Outer    | 2009 | 340_09LTM | 2   | Macoma Tenta                   | 313       |
| Outer    | 2009 | 340_09LTM | 1   | Maldane Sarsi                  | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Maldane Sarsi                  | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Mediomastus Ambiseta           | 3         |
| Outer    | 2009 | 340_09LTM | 2   | Mediomastus Ambiseta           | 18        |
| Outer    | 2009 | 340_09LTM | 1   | Melinna Cristata               | 5         |
| Outer    | 2009 | 340_09LTM | 2   | Melinna Cristata               | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Mitrella Lunata                | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Mulinia Lateralis              | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Mulinia Lateralis              | 3         |
| Outer    | 2009 | 340_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 340_09LTM | 1   | Nephtys Incisa                 | 26        |
| Outer    | 2009 | 340_09LTM | 2   | Nephtys Incisa                 | 44        |
| Outer    | 2009 | 340_09LTM | 2   | Nereis Grayi                   | 2         |
| Outer    | 2009 | 340_09LTM | 1   | Ninoe Nigripes                 | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Ninoe Nigripes                 | 4         |
| Outer    | 2009 | 340_09LTM | 2   | Notomastus Latericeus          | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Nucula Annulata                | 42        |
| Outer    | 2009 | 340_09LTM | 2   | Nucula Annulata                | 37        |
| Outer    | 2009 | 340_09LTM | 1   | Oligochaeta                    | 5         |
| Outer    | 2009 | 340_09LTM | 2   | Oligochaeta                    | 3         |
| Outer    | 2009 | 340_09LTM | 1   | Ostracoda                      | 17        |
| Outer    | 2009 | 340_09LTM | 2   | Ostracoda                      | 2         |
| Outer    | 2009 | 340_09LTM | 1   | Parougia Caeca                 | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Parougia Caeca                 | 2         |
| Outer    | 2009 | 340_09LTM | 1   | Pectinaria Gouldi              | 3         |
| Outer    | 2009 | 340_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Phyllodoce Arenae              | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Pinnixa Chaetoptera            | 2         |
| Outer    | 2009 | 340_09LTM | 1   | Pinnixa Sayana                 | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Pitar Morrhuanus               | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 3         |
| Outer    | 2009 | 340_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 18        |
| Outer    | 2009 | 340_09LTM | 1   | Saccoglossus Kowalevskii       | 5         |
| Outer    | 2009 | 340_09LTM | 2   | Saccoglossus Kowalevskii       | 20        |
| Outer    | 2009 | 340_09LTM | 2   | Scolecipis Bousfieldi          | 3         |
| Outer    | 2009 | 340_09LTM | 2   | Spiophanes Bombyx              | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Stylochus Ellipticus           | 4         |
| Outer    | 2009 | 340_09LTM | 1   | Tectonatica Pusilla            | 1         |
| Outer    | 2009 | 340_09LTM | 1   | Tellina Agilis                 | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name              | Abundance |
|----------|------|-----------|-----|------------------------------|-----------|
| Outer    | 2009 | 340_09LTM | 1   | Tellinidae                   | 25        |
| Outer    | 2009 | 340_09LTM | 2   | Tellinidae                   | 21        |
| Outer    | 2009 | 340_09LTM | 1   | Tharyx Acutus                | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Tharyx Acutus                | 8         |
| Outer    | 2009 | 340_09LTM | 2   | Tubulanus Sp.                | 5         |
| Outer    | 2009 | 340_09LTM | 1   | Turbonilla Elegantula        | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Turbonilla Elegantula        | 2         |
| Outer    | 2009 | 340_09LTM | 2   | Turbonilla Interrupta        | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Yoldia Limatula              | 1         |
| Outer    | 2009 | 340_09LTM | 2   | Yoldia Sp.                   | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Acteocina Canaliculata       | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Ampelisca Abdita             | 4         |
| Outer    | 2009 | 341_09LTM | 2   | Ampelisca Abdita             | 4         |
| Outer    | 2009 | 341_09LTM | 1   | Ampelisca Vadorum            | 5         |
| Outer    | 2009 | 341_09LTM | 2   | Ampelisca Vadorum            | 11        |
| Outer    | 2009 | 341_09LTM | 1   | Ampelisca Verrilli           | 18        |
| Outer    | 2009 | 341_09LTM | 2   | Ampelisca Verrilli           | 10        |
| Outer    | 2009 | 341_09LTM | 1   | Amphiporus Bioculatus        | 6         |
| Outer    | 2009 | 341_09LTM | 2   | Amphiporus Bioculatus        | 6         |
| Outer    | 2009 | 341_09LTM | 2   | Anachis Lafresnayi           | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Anadara Transversa           | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Anadara Transversa           | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Aricidea (Acmira) Catherinae | 23        |
| Outer    | 2009 | 341_09LTM | 2   | Aricidea (Acmira) Catherinae | 6         |
| Outer    | 2009 | 341_09LTM | 2   | Barentsia Gracilis           | P         |
| Outer    | 2009 | 341_09LTM | 2   | Bowerbankia Imbricata        | P         |
| Outer    | 2009 | 341_09LTM | 2   | Brania Clavata               | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Cabira Incerta               | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Cerastoderma Pinnulatum      | 8         |
| Outer    | 2009 | 341_09LTM | 1   | Cirratulidae                 | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Cirratulidae                 | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Cirrophorus Furcatus         | 9         |
| Outer    | 2009 | 341_09LTM | 2   | Cirrophorus Furcatus         | 7         |
| Outer    | 2009 | 341_09LTM | 2   | Cliona Celata                | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Crepidula Plana              | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Cylichna Oryza               | 5         |
| Outer    | 2009 | 341_09LTM | 2   | Cylichna Oryza               | 8         |
| Outer    | 2009 | 341_09LTM | 1   | Diopatra Cuprea              | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Diopatra Cuprea              | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Edwardsia Elegans            | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Epitonium Multistriatum      | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Ericthonius Brasiliensis     | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Euclymene Collaris           | 7         |
| Outer    | 2009 | 341_09LTM | 2   | Euclymene Collaris           | 17        |
| Outer    | 2009 | 341_09LTM | 1   | Exogone Dispar               | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Glycera Americana            | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Glycera Americana            | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Glycera Sp.                  | 3         |
| Outer    | 2009 | 341_09LTM | 2   | Glycera Sp.                  | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Hutchinsoniella Macracantha  | 14        |
| Outer    | 2009 | 341_09LTM | 1   | Lyonsia Hyalina              | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Lyonsia Hyalina              | 4         |
| Outer    | 2009 | 341_09LTM | 1   | Macoma Tenta                 | 15        |
| Outer    | 2009 | 341_09LTM | 2   | Macoma Tenta                 | 15        |
| Outer    | 2009 | 341_09LTM | 2   | Maldane Sarsi                | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Mediomastus Ambiseta         | 18        |
| Outer    | 2009 | 341_09LTM | 2   | Mediomastus Ambiseta         | 13        |
| Outer    | 2009 | 341_09LTM | 2   | Micrura Sp.                  | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Mitrella Lunata              | 3         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 341_09LTM | 2   | Mitrella Lunata                | 8         |
| Outer    | 2009 | 341_09LTM | 2   | Monticellina Baptisteae        | 6         |
| Outer    | 2009 | 341_09LTM | 1   | Monticellina Dorsobranchialis  | 5         |
| Outer    | 2009 | 341_09LTM | 2   | Monticellina Dorsobranchialis  | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 341_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 341_09LTM | 2   | Nephtys Incisa                 | 3         |
| Outer    | 2009 | 341_09LTM | 2   | Nereis Grayi                   | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Ninoe Nigripes                 | 6         |
| Outer    | 2009 | 341_09LTM | 2   | Ninoe Nigripes                 | 8         |
| Outer    | 2009 | 341_09LTM | 1   | Notomastus Latericeus          | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Notomastus Latericeus          | 3         |
| Outer    | 2009 | 341_09LTM | 1   | Oligochaeta                    | 10        |
| Outer    | 2009 | 341_09LTM | 2   | Oligochaeta                    | 6         |
| Outer    | 2009 | 341_09LTM | 1   | Ophiuroidea                    | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Ostracoda                      | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Oxyurostylis Smithi            | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Parougia Caeca                 | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Pectinaria Gouldi              | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Phyllodoce Arenae              | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Phyllodoce Arenae              | 3         |
| Outer    | 2009 | 341_09LTM | 1   | Pinnixa Chaetoptera            | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Pinnixa Sayana                 | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Pitar Morrhuanus               | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Pitar Morrhuanus               | 3         |
| Outer    | 2009 | 341_09LTM | 1   | Polycirrus Eximius             | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 5         |
| Outer    | 2009 | 341_09LTM | 2   | Ptilanthura Tenuis             | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Saccoglossus Kowalevskii       | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Sphaerosyllis Longicauda       | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Sphaerosyllis Taylori          | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Spiochaetopterus Oculatus      | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Spiochaetopterus Oculatus      | 4         |
| Outer    | 2009 | 341_09LTM | 2   | Spiophanes Bombyx              | 2         |
| Outer    | 2009 | 341_09LTM | 1   | Sthenelais Boa                 | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Sthenelais Boa                 | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Tagelus Divisus                | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Tectonatica Pusilla            | 2         |
| Outer    | 2009 | 341_09LTM | 2   | Tellina Agilis                 | 6         |
| Outer    | 2009 | 341_09LTM | 1   | Tellinidae                     | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Tellinidae                     | 4         |
| Outer    | 2009 | 341_09LTM | 1   | Tharyx Acutus                  | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Tubulanus Sp.                  | 3         |
| Outer    | 2009 | 341_09LTM | 1   | Turbonilla Elegantula          | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Turbonilla Elegantula          | 1         |
| Outer    | 2009 | 341_09LTM | 1   | Upogebia Affinis               | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Yoldia Limatula                | 1         |
| Outer    | 2009 | 341_09LTM | 2   | Zaops Ostreum                  | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Acteocina Canaliculata         | 21        |
| Outer    | 2009 | 345_09LTM | 2   | Acteocina Canaliculata         | 31        |
| Outer    | 2009 | 345_09LTM | 1   | Ampelisca Abdita               | 5         |
| Outer    | 2009 | 345_09LTM | 2   | Ampelisca Abdita               | 2         |
| Outer    | 2009 | 345_09LTM | 1   | Ampharete Finmarchica          | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Amphiporus Bioculatus          | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Anadara Transversa             | 3         |
| Outer    | 2009 | 345_09LTM | 1   | Anoplodactylus Petiolatus      | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 345_09LTM | 1   | Aricidea (Acmira) Catherinae   | 21        |
| Outer    | 2009 | 345_09LTM | 2   | Aricidea (Acmira) Catherinae   | 9         |
| Outer    | 2009 | 345_09LTM | 1   | Aricidea (Acmira) Cerruti      | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Asabellides Oculata            | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Bougainvilliidae               | P         |
| Outer    | 2009 | 345_09LTM | 2   | Capitella Jonesi               | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Cerastoderma Pinnulatum        | 1         |
| Outer    | 2009 | 345_09LTM | 2   | Cerastoderma Pinnulatum        | 3         |
| Outer    | 2009 | 345_09LTM | 1   | Cirratulidae                   | 1         |
| Outer    | 2009 | 345_09LTM | 2   | Cirratulidae                   | 2         |
| Outer    | 2009 | 345_09LTM | 1   | Cylichna Oryza                 | 219       |
| Outer    | 2009 | 345_09LTM | 2   | Cylichna Oryza                 | 319       |
| Outer    | 2009 | 345_09LTM | 1   | Edotia Sp.                     | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Edwardsia Elegans              | 1         |
| Outer    | 2009 | 345_09LTM | 2   | Fargoa Bartschi                | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Ilyanassa Trivittata           | 9         |
| Outer    | 2009 | 345_09LTM | 2   | Kurtziella Cerina              | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Lovenella Gracilis             | P         |
| Outer    | 2009 | 345_09LTM | 1   | Lyonsia Hyalina                | 2         |
| Outer    | 2009 | 345_09LTM | 2   | Lyonsia Hyalina                | 4         |
| Outer    | 2009 | 345_09LTM | 1   | Macoma Tenta                   | 186       |
| Outer    | 2009 | 345_09LTM | 2   | Macoma Tenta                   | 177       |
| Outer    | 2009 | 345_09LTM | 1   | Maldane Sarsi                  | 4         |
| Outer    | 2009 | 345_09LTM | 2   | Maldane Sarsi                  | 4         |
| Outer    | 2009 | 345_09LTM | 1   | Mediomastus Ambiseta           | 6         |
| Outer    | 2009 | 345_09LTM | 2   | Mediomastus Ambiseta           | 5         |
| Outer    | 2009 | 345_09LTM | 1   | Melinna Cristata               | 4         |
| Outer    | 2009 | 345_09LTM | 2   | Melinna Cristata               | 5         |
| Outer    | 2009 | 345_09LTM | 1   | Mitrella Lunata                | 7         |
| Outer    | 2009 | 345_09LTM | 1   | Mulinia Lateralis              | 1         |
| Outer    | 2009 | 345_09LTM | 2   | Mulinia Lateralis              | 3         |
| Outer    | 2009 | 345_09LTM | 1   | Nematoda                       | P         |
| Outer    | 2009 | 345_09LTM | 2   | Nematoda                       | P         |
| Outer    | 2009 | 345_09LTM | 1   | Nephtys Incisa                 | 41        |
| Outer    | 2009 | 345_09LTM | 2   | Nephtys Incisa                 | 46        |
| Outer    | 2009 | 345_09LTM | 1   | Ninoe Nigripes                 | 4         |
| Outer    | 2009 | 345_09LTM | 2   | Ninoe Nigripes                 | 4         |
| Outer    | 2009 | 345_09LTM | 1   | Nucula Annulata                | 27        |
| Outer    | 2009 | 345_09LTM | 2   | Nucula Annulata                | 17        |
| Outer    | 2009 | 345_09LTM | 1   | Odostomia Eburnea              | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Oligochaeta                    | 1         |
| Outer    | 2009 | 345_09LTM | 2   | Oligochaeta                    | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Ostracoda                      | 55        |
| Outer    | 2009 | 345_09LTM | 2   | Ostracoda                      | 39        |
| Outer    | 2009 | 345_09LTM | 1   | Oxyurostylis Smithi            | 3         |
| Outer    | 2009 | 345_09LTM | 1   | Pectinaria Gouldi              | 7         |
| Outer    | 2009 | 345_09LTM | 2   | Pectinaria Gouldi              | 3         |
| Outer    | 2009 | 345_09LTM | 1   | Phyllodoce Arenae              | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Pitar Morrhuanus               | 4         |
| Outer    | 2009 | 345_09LTM | 2   | Pitar Morrhuanus               | 7         |
| Outer    | 2009 | 345_09LTM | 2   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 2         |
| Outer    | 2009 | 345_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 2         |
| Outer    | 2009 | 345_09LTM | 1   | Saccoglossus Kowalevskii       | 17        |
| Outer    | 2009 | 345_09LTM | 2   | Saccoglossus Kowalevskii       | 4         |
| Outer    | 2009 | 345_09LTM | 1   | Scolecipis Bousfieldi          | 2         |
| Outer    | 2009 | 345_09LTM | 2   | Scolecipis Bousfieldi          | 4         |
| Outer    | 2009 | 345_09LTM | 2   | Spiochaetopterus Oculatus      | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Tectonatica Pusilla            | 3         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Outer    | 2009 | 345_09LTM | 2   | Tectonatica Pusilla           | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Tellina Agilis                | 4         |
| Outer    | 2009 | 345_09LTM | 2   | Tellina Agilis                | 3         |
| Outer    | 2009 | 345_09LTM | 1   | Tellinidae                    | 37        |
| Outer    | 2009 | 345_09LTM | 2   | Tellinidae                    | 29        |
| Outer    | 2009 | 345_09LTM | 1   | Tharyx Acutus                 | 14        |
| Outer    | 2009 | 345_09LTM | 2   | Tharyx Acutus                 | 5         |
| Outer    | 2009 | 345_09LTM | 1   | Tubulanus Sp.                 | 10        |
| Outer    | 2009 | 345_09LTM | 2   | Tubulanus Sp.                 | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Turbonilla Elegantula         | 47        |
| Outer    | 2009 | 345_09LTM | 2   | Turbonilla Elegantula         | 2         |
| Outer    | 2009 | 345_09LTM | 2   | Turbonilla Interrupta         | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Yoldia Limatula               | 2         |
| Outer    | 2009 | 345_09LTM | 2   | Yoldia Limatula               | 1         |
| Outer    | 2009 | 345_09LTM | 1   | Yoldia Sp.                    | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Aetea Sica                    | P         |
| Outer    | 2009 | 346_09LTM | 1   | Ampelisca Abdita              | 5         |
| Outer    | 2009 | 346_09LTM | 1   | Ampelisca Vadorum             | 30        |
| Outer    | 2009 | 346_09LTM | 2   | Ampelisca Vadorum             | 61        |
| Outer    | 2009 | 346_09LTM | 1   | Ampelisca Verrilli            | 74        |
| Outer    | 2009 | 346_09LTM | 2   | Ampelisca Verrilli            | 55        |
| Outer    | 2009 | 346_09LTM | 1   | Ampharete Finmarchica         | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Amphiporus Bioculatus         | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Amphiporus Bioculatus         | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Ampithoe Valida               | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Anachis Lafresnayi            | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Anachis Lafresnayi            | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Anadara Transversa            | 5         |
| Outer    | 2009 | 346_09LTM | 2   | Anadara Transversa            | 10        |
| Outer    | 2009 | 346_09LTM | 2   | Arabella Iricolor             | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Aricidea (Acmira) Catherinae  | 6         |
| Outer    | 2009 | 346_09LTM | 2   | Aricidea (Acmira) Catherinae  | 14        |
| Outer    | 2009 | 346_09LTM | 1   | Batea Catharinensis           | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Batea Catharinensis           | 3         |
| Outer    | 2009 | 346_09LTM | 1   | Bittium Alternatum            | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Bowerbankia Imbricata         | P         |
| Outer    | 2009 | 346_09LTM | 2   | Brania Wellfleetensis         | 5         |
| Outer    | 2009 | 346_09LTM | 1   | Byblis Serrata                | 20        |
| Outer    | 2009 | 346_09LTM | 2   | Byblis Serrata                | 7         |
| Outer    | 2009 | 346_09LTM | 2   | Capitella Capitata            | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Capitella Jonesi              | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Capitella Jonesi              | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Caulleriella Cf. Killariensis | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Cerastoderma Pinnulatum       | 6         |
| Outer    | 2009 | 346_09LTM | 2   | Cerastoderma Pinnulatum       | 14        |
| Outer    | 2009 | 346_09LTM | 2   | Chaetozone Sp.                | 5         |
| Outer    | 2009 | 346_09LTM | 1   | Cirratulidae                  | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Cirratulidae                  | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Cirrophorus Furcatus          | 13        |
| Outer    | 2009 | 346_09LTM | 2   | Cliona Celata                 | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Clymenella Torquata           | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Crepidula Plana               | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Crepidula Plana               | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Cylichna Oryza                | 8         |
| Outer    | 2009 | 346_09LTM | 2   | Cylichna Oryza                | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Demonax Microphthalmus        | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Dipolydora Socialis           | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Edotia Sp.                    | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Ensis Directus                | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Outer    | 2009 | 346_09LTM | 1   | Eobrolgus Spinosus            | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Eobrolgus Spinosus            | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Ericthonius Brasiliensis      | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Ericthonius Brasiliensis      | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Euclymene Collaris            | 4         |
| Outer    | 2009 | 346_09LTM | 2   | Euclymene Collaris            | 11        |
| Outer    | 2009 | 346_09LTM | 2   | Eunicidae                     | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Exogone Dispar                | 4         |
| Outer    | 2009 | 346_09LTM | 2   | Gilvossius Setimanus          | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Glycera Americana             | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Glycera Sp.                   | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Glycera Sp.                   | 6         |
| Outer    | 2009 | 346_09LTM | 2   | Harmothoe Extenuata           | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Hemicyclops Sp.               | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Heteromysis Formosa           | 14        |
| Outer    | 2009 | 346_09LTM | 2   | Hexapanopeus Angustifrons     | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Laevicardium Mortoni          | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Laevicardium Mortoni          | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Leitoscoloplos Fragilis       | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Listriella Barnardi           | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Lovenella Gracilis            | P         |
| Outer    | 2009 | 346_09LTM | 1   | Lyonsia Hyalina               | 4         |
| Outer    | 2009 | 346_09LTM | 2   | Lyonsia Hyalina               | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Macoma Tenta                  | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Macoma Tenta                  | 4         |
| Outer    | 2009 | 346_09LTM | 1   | Mediomastus Ambiseta          | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Mediomastus Ambiseta          | 3         |
| Outer    | 2009 | 346_09LTM | 1   | Microdeutopus Anomalus        | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Microdeutopus Anomalus        | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Mitrella Lunata               | 13        |
| Outer    | 2009 | 346_09LTM | 2   | Mitrella Lunata               | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Monticellina Dorsobranchialis | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Monticellina Dorsobranchialis | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Nematoda                      | P         |
| Outer    | 2009 | 346_09LTM | 2   | Nematoda                      | P         |
| Outer    | 2009 | 346_09LTM | 1   | Nephtys Incisa                | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Nephtys Picta                 | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Nicolea Zostericola           | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Ninoe Nigripes                | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Ninoe Nigripes                | 4         |
| Outer    | 2009 | 346_09LTM | 1   | Notomastus Latericeus         | 4         |
| Outer    | 2009 | 346_09LTM | 2   | Notomastus Latericeus         | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Odontosyllis Fulgurans        | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Oligochaeta                   | 6         |
| Outer    | 2009 | 346_09LTM | 2   | Oligochaeta                   | 9         |
| Outer    | 2009 | 346_09LTM | 1   | Ophiuroidea                   | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Ophiuroidea                   | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Ostracoda                     | 8         |
| Outer    | 2009 | 346_09LTM | 2   | Ostracoda                     | 8         |
| Outer    | 2009 | 346_09LTM | 2   | Oxyurostylis Smithi           | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Pagurus Annulipes             | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Pandora Inflata               | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Parapionosyllis Longicirrata  | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Parougia Caeca                | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Phyllodoce Arenae             | 6         |
| Outer    | 2009 | 346_09LTM | 2   | Phyllodoce Arenae             | 6         |
| Outer    | 2009 | 346_09LTM | 1   | Pinnixa Chaetoptera           | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Pinnixa Chaetoptera           | 9         |
| Outer    | 2009 | 346_09LTM | 1   | Pinnixa Sayana                | 1         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 346_09LTM | 2   | Pista Palmata                  | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Pitar Morrhuanus               | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Polycirrus Eximius             | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Polycirrus Eximius             | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Polycirrus Sp.                 | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Polycirrus Sp.                 | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 3         |
| Outer    | 2009 | 346_09LTM | 2   | Protodorvillea Gaspeensis      | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Sabellaria Vulgaris            | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Sabellaria Vulgaris            | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Scalibregma Inflatum           | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Scalibregma Inflatum           | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Spiochaetopterus Oculatus      | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Spiochaetopterus Oculatus      | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Spiophanes Bombyx              | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Spiophanes Bombyx              | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Spisula Solidissima            | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Sthenelais Boa                 | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Sthenelais Boa                 | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Syllides Cf. Verrilli          | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Tagelus Divisus                | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Tectonatica Pusilla            | 5         |
| Outer    | 2009 | 346_09LTM | 2   | Tectonatica Pusilla            | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Tellina Agilis                 | 5         |
| Outer    | 2009 | 346_09LTM | 2   | Tellina Agilis                 | 10        |
| Outer    | 2009 | 346_09LTM | 1   | Tellinidae                     | 2         |
| Outer    | 2009 | 346_09LTM | 1   | Tharyx Acutus                  | 19        |
| Outer    | 2009 | 346_09LTM | 2   | Tharyx Acutus                  | 20        |
| Outer    | 2009 | 346_09LTM | 2   | Tubulanus Sp.                  | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Turbellaria                    | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Turbonilla Elegantula          | 6         |
| Outer    | 2009 | 346_09LTM | 1   | Turbonilla Interrupta          | 2         |
| Outer    | 2009 | 346_09LTM | 2   | Turbonilla Interrupta          | 1         |
| Outer    | 2009 | 346_09LTM | 1   | Unciola Irrorata               | 1         |
| Outer    | 2009 | 346_09LTM | 2   | Upogebia Affinis               | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Acteocina Canaliculata         | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Aetea Sica                     | P         |
| Outer    | 2009 | 349_09LTM | 1   | Ampelisca Abdita               | 56        |
| Outer    | 2009 | 349_09LTM | 2   | Ampelisca Abdita               | 53        |
| Outer    | 2009 | 349_09LTM | 1   | Ampelisca Vadorum              | 36        |
| Outer    | 2009 | 349_09LTM | 2   | Ampelisca Vadorum              | 24        |
| Outer    | 2009 | 349_09LTM | 1   | Ampelisca Verrilli             | 30        |
| Outer    | 2009 | 349_09LTM | 2   | Ampelisca Verrilli             | 19        |
| Outer    | 2009 | 349_09LTM | 1   | Amphiporus Bioculatus          | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Anadara Ovalis                 | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Anadara Transversa             | 21        |
| Outer    | 2009 | 349_09LTM | 2   | Anadara Transversa             | 3         |
| Outer    | 2009 | 349_09LTM | 2   | Ancistrosyllis Hartmanae       | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Anomia Simplex                 | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Arabella Iricolor              | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Aricidea (Acmira) Catherinae   | 6         |
| Outer    | 2009 | 349_09LTM | 2   | Aricidea (Acmira) Catherinae   | 9         |
| Outer    | 2009 | 349_09LTM | 2   | Balanus Sp.                    | 4         |
| Outer    | 2009 | 349_09LTM | 1   | Balanus Venustus               | 37        |
| Outer    | 2009 | 349_09LTM | 2   | Barentsia Gracilis             | P         |
| Outer    | 2009 | 349_09LTM | 1   | Batea Catharinensis            | 16        |
| Outer    | 2009 | 349_09LTM | 2   | Batea Catharinensis            | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Bittium Alternatum             | 3         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Outer    | 2009 | 349_09LTM | 1   | Boonea Seminuda               | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Boonea Seminuda               | 25        |
| Outer    | 2009 | 349_09LTM | 1   | Capitella Jonesi              | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Cerapus Sp. A                 | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Cirratulidae                  | 4         |
| Outer    | 2009 | 349_09LTM | 2   | Cirratulidae                  | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Cirrophorus Furcatus          | 5         |
| Outer    | 2009 | 349_09LTM | 2   | Cirrophorus Furcatus          | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Cliona Celata                 | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Clymenella Torquata           | 12        |
| Outer    | 2009 | 349_09LTM | 2   | Clymenella Torquata           | 18        |
| Outer    | 2009 | 349_09LTM | 1   | Clytia Gracilis               | P         |
| Outer    | 2009 | 349_09LTM | 1   | Crepidula Fornicata           | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Crepidula Fornicata           | 78        |
| Outer    | 2009 | 349_09LTM | 2   | Crepidula Plana               | 34        |
| Outer    | 2009 | 349_09LTM | 2   | Crepidula Sp.                 | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Cylichna Oryza                | 28        |
| Outer    | 2009 | 349_09LTM | 2   | Cylichna Oryza                | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Cymadusa Compta               | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Dipolydora Socialis           | 4         |
| Outer    | 2009 | 349_09LTM | 1   | Dyspanopeus Sayi              | 8         |
| Outer    | 2009 | 349_09LTM | 2   | Dyspanopeus Sayi              | 3         |
| Outer    | 2009 | 349_09LTM | 2   | Edwardsia Elegans             | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Elasmopus Laevis              | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Ensis Directus                | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Ericthonius Brasiliensis      | 10        |
| Outer    | 2009 | 349_09LTM | 1   | Euclymene Collaris            | 11        |
| Outer    | 2009 | 349_09LTM | 2   | Euclymene Collaris            | 11        |
| Outer    | 2009 | 349_09LTM | 1   | Eumida Sanguinea              | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Eumida Sanguinea              | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Exogone Dispar                | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Glycera Americana             | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Glycera Americana             | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Glycera Sp.                   | 6         |
| Outer    | 2009 | 349_09LTM | 2   | Glycera Sp.                   | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Harmothoe Sp.                 | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Heteromysis Formosa           | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Hippolyte Sp.                 | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Hutchinsoniella Macracantha   | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Hutchinsoniella Macracantha   | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Laevicardium Mortoni          | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Leitoscoloplos Fragilis       | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Levinsenia Gracilis           | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Luconacia Incerta             | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Lyonsia Hyalina               | 5         |
| Outer    | 2009 | 349_09LTM | 2   | Lyonsia Hyalina               | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Macoma Tenta                  | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Maldane Sarsi                 | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Mediomastus Ambiseta          | 6         |
| Outer    | 2009 | 349_09LTM | 2   | Mediomastus Ambiseta          | 4         |
| Outer    | 2009 | 349_09LTM | 2   | Microdeutopus Anomalus        | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Microphthalmus Sczelkowi      | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Microprotopus Raneyi          | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Mitrella Lunata               | 54        |
| Outer    | 2009 | 349_09LTM | 2   | Mitrella Lunata               | 14        |
| Outer    | 2009 | 349_09LTM | 1   | Monticellina Dorsobranchialis | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Monticellina Dorsobranchialis | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Nematoda                      | P         |
| Outer    | 2009 | 349_09LTM | 2   | Nematoda                      | P         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 349_09LTM | 1   | Ninoe Nigripes                 | 3         |
| Outer    | 2009 | 349_09LTM | 2   | Ninoe Nigripes                 | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Notomastus Latericeus          | 5         |
| Outer    | 2009 | 349_09LTM | 2   | Notomastus Latericeus          | 8         |
| Outer    | 2009 | 349_09LTM | 2   | Nucula Annulata                | 6         |
| Outer    | 2009 | 349_09LTM | 1   | Oligochaeta                    | 8         |
| Outer    | 2009 | 349_09LTM | 2   | Oligochaeta                    | 6         |
| Outer    | 2009 | 349_09LTM | 1   | Ophiuroidea                    | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Ostracoda                      | 7         |
| Outer    | 2009 | 349_09LTM | 1   | Oxyurostylis Smithi            | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Pagurus Annulipes              | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Pagurus Annulipes              | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Paracaprella Tenuis            | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Pectinaria Gouldi              | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Phyllodoce Arenae              | 5         |
| Outer    | 2009 | 349_09LTM | 2   | Phyllodoce Arenae              | 4         |
| Outer    | 2009 | 349_09LTM | 1   | Pinnixa Chaetoptera            | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Pinnixa Chaetoptera            | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Pitar Morrhuanus               | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Polydora Cornuta               | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Polygordius Sp.                | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Prionospio Heterobranchia      | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Protodorvillea Gaspeensis      | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Sabellaria Vulgaris            | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Seila Adamsi                   | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Sphaerosyllis Taylori          | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Spiochaetopterus Oculatus      | 4         |
| Outer    | 2009 | 349_09LTM | 2   | Spiochaetopterus Oculatus      | 8         |
| Outer    | 2009 | 349_09LTM | 1   | Spionidae                      | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Spiophanes Bombyx              | 11        |
| Outer    | 2009 | 349_09LTM | 2   | Spiophanes Bombyx              | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Sthenelais Boa                 | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Sthenelais Boa                 | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Stylochus Ellipticus           | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Tagelus Divisus                | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Tellina Agilis                 | 13        |
| Outer    | 2009 | 349_09LTM | 1   | Tellinidae                     | 1         |
| Outer    | 2009 | 349_09LTM | 2   | Tellinidae                     | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Tharyx Acutus                  | 8         |
| Outer    | 2009 | 349_09LTM | 2   | Tharyx Acutus                  | 2         |
| Outer    | 2009 | 349_09LTM | 1   | Tubulanus Sp.                  | 5         |
| Outer    | 2009 | 349_09LTM | 2   | Tubulanus Sp.                  | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Turbonilla Elegantula          | 2         |
| Outer    | 2009 | 349_09LTM | 2   | Turbonilla Elegantula          | 3         |
| Outer    | 2009 | 349_09LTM | 1   | Turbonilla Interrupta          | 8         |
| Outer    | 2009 | 349_09LTM | 2   | Turbonilla Interrupta          | 7         |
| Outer    | 2009 | 349_09LTM | 2   | Turbonilla Sp.                 | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Unciola Irrorata               | 4         |
| Outer    | 2009 | 349_09LTM | 1   | Yoldia Limatula                | 1         |
| Outer    | 2009 | 349_09LTM | 1   | Yoldia Sp.                     | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Ampelisca Vadorum              | 23        |
| Outer    | 2009 | 352_09LTM | 2   | Ampelisca Vadorum              | 19        |
| Outer    | 2009 | 352_09LTM | 1   | Ampharete Finmarchica          | 3         |
| Outer    | 2009 | 352_09LTM | 2   | Ampharete Finmarchica          | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Amphioplus Abdita              | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Amphioplus Abdita              | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Amphiporus Bioculatus          | 3         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name              | Abundance |
|----------|------|-----------|-----|------------------------------|-----------|
| Outer    | 2009 | 352_09LTM | 2   | Amphiporus Cruentatus        | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Anachis Lafresnayi           | 4         |
| Outer    | 2009 | 352_09LTM | 2   | Anachis Lafresnayi           | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Ancistrosyllis Hartmanae     | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Ancistrosyllis Hartmanae     | 5         |
| Outer    | 2009 | 352_09LTM | 2   | Anomia Simplex               | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Anomia Sp.                   | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Aphelochaeta Marioni         | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Apocorophium Acutum          | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Aricidea (Acmira) Catherinae | 19        |
| Outer    | 2009 | 352_09LTM | 2   | Aricidea (Acmira) Catherinae | 20        |
| Outer    | 2009 | 352_09LTM | 1   | Aricidea Sp.                 | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Autolytus Fasciatus          | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Balanus Venustus             | 6         |
| Outer    | 2009 | 352_09LTM | 1   | Batea Catharinensis          | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Boonea Seminuda              | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Brania Clavata               | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Brania Clavata               | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Brania Wellfleetensis        | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Cabira Incerta               | 4         |
| Outer    | 2009 | 352_09LTM | 2   | Cabira Incerta               | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Carazziella Hobsonae         | 7         |
| Outer    | 2009 | 352_09LTM | 2   | Carazziella Hobsonae         | 8         |
| Outer    | 2009 | 352_09LTM | 2   | Carinoma Tremaphoros         | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Cerastoderma Pinnulatum      | 5         |
| Outer    | 2009 | 352_09LTM | 1   | Ceriantharia                 | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Chaetopleura Apiculata       | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Chaetozone Sp.               | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Cirratulidae                 | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Cirratulidae                 | 4         |
| Outer    | 2009 | 352_09LTM | 1   | Cirrophorus Furcatus         | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Cirrophorus Furcatus         | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Corbula Contracta            | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Crassinella Lunulata         | 6         |
| Outer    | 2009 | 352_09LTM | 2   | Crassinella Lunulata         | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Crepidula Fornicata          | 20        |
| Outer    | 2009 | 352_09LTM | 2   | Crepidula Fornicata          | 35        |
| Outer    | 2009 | 352_09LTM | 1   | Crepidula Plana              | 3         |
| Outer    | 2009 | 352_09LTM | 2   | Crepidula Plana              | 11        |
| Outer    | 2009 | 352_09LTM | 1   | Crepidula Sp.                | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Crepidula Sp.                | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Cylichna Oryza               | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Dipolydora Socialis          | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Dipolydora Sp                | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Drilonereis Longa            | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Dyspanopeus Sayi             | 7         |
| Outer    | 2009 | 352_09LTM | 2   | Dyspanopeus Sayi             | 14        |
| Outer    | 2009 | 352_09LTM | 1   | Edwardsia Elegans            | 34        |
| Outer    | 2009 | 352_09LTM | 2   | Edwardsia Elegans            | 20        |
| Outer    | 2009 | 352_09LTM | 1   | Eobrolgus Spinosus           | 5         |
| Outer    | 2009 | 352_09LTM | 2   | Eobrolgus Spinosus           | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Epitomapta Roseola           | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Epitomapta Roseola           | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Epitonium Multistriatum      | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Ericthonius Brasiliensis     | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Euclymene Collaris           | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Euclymene Collaris           | 4         |
| Outer    | 2009 | 352_09LTM | 1   | Eumida Sanguinea             | 31        |
| Outer    | 2009 | 352_09LTM | 2   | Eumida Sanguinea             | 14        |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name               | Abundance |
|----------|------|-----------|-----|-------------------------------|-----------|
| Outer    | 2009 | 352_09LTM | 1   | Exogone Dispar                | 9         |
| Outer    | 2009 | 352_09LTM | 2   | Exogone Dispar                | 17        |
| Outer    | 2009 | 352_09LTM | 1   | Glycera Sp.                   | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Glycera Sp.                   | 8         |
| Outer    | 2009 | 352_09LTM | 2   | Golfingia Sp.                 | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Harmothoe Extenuata           | 3         |
| Outer    | 2009 | 352_09LTM | 2   | Harmothoe Extenuata           | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Harmothoe Lunulata            | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Harmothoe Lunulata            | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Heteromastus Filiformis       | 3         |
| Outer    | 2009 | 352_09LTM | 2   | Heteromastus Filiformis       | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Heteromysis Formosa           | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Heteromysis Formosa           | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Hexapanopeus Angustifrons     | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Ianiropsis Sp. 1              | 9         |
| Outer    | 2009 | 352_09LTM | 1   | Laevicardium Mortoni          | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Leitoscoloplos Fragilis       | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Leitoscoloplos Fragilis       | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Leitoscoloplos Sp.            | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Lembos Smithi                 | 3         |
| Outer    | 2009 | 352_09LTM | 2   | Lembos Smithi                 | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Lepidonotus Squamatus         | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Lepidonotus Sublevis          | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Maldane Sarsi                 | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Maldanidae                    | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Margarites Sp.                | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Mediomastus Ambiseta          | 6         |
| Outer    | 2009 | 352_09LTM | 2   | Mediomastus Ambiseta          | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Melanella Sarsi               | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Microdeutopus Anomalus        | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Mitrella Lunata               | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Monticellina Dorsobranchialis | 5         |
| Outer    | 2009 | 352_09LTM | 2   | Monticellina Dorsobranchialis | 16        |
| Outer    | 2009 | 352_09LTM | 2   | Neanthes Arenaceodentata      | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Nematoda                      | P         |
| Outer    | 2009 | 352_09LTM | 2   | Nematoda                      | P         |
| Outer    | 2009 | 352_09LTM | 1   | Nicolea Zostericola           | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Nucula Proxima                | 17        |
| Outer    | 2009 | 352_09LTM | 1   | Nucula Proxima                | 29        |
| Outer    | 2009 | 352_09LTM | 1   | Odontosyllis Fulgurans        | 6         |
| Outer    | 2009 | 352_09LTM | 2   | Odontosyllis Fulgurans        | 7         |
| Outer    | 2009 | 352_09LTM | 1   | Oligochaeta                   | 27        |
| Outer    | 2009 | 352_09LTM | 2   | Oligochaeta                   | 90        |
| Outer    | 2009 | 352_09LTM | 1   | Oxyurostylis Smithi           | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Pagurus Annulipes             | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Pagurus Annulipes             | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Paracaprella Tenuis           | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Parapionosyllis Longicirrata  | 3         |
| Outer    | 2009 | 352_09LTM | 2   | Parapionosyllis Longicirrata  | 23        |
| Outer    | 2009 | 352_09LTM | 1   | Parougia Caeca                | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Parougia Caeca                | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Pectinaria Gouldi             | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Pentamera Calcigera           | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Periploma Leanum              | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Periploma Leanum              | 3         |
| Outer    | 2009 | 352_09LTM | 2   | Pherusa Affinis               | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Phyllodoce Arenae             | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Pisone Remota                 | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Pista Palmata                 | 2         |

## 2009 New Bedford Harbor Phase I

| Location | Year | Station   | Rep | Scientific_Name                | Abundance |
|----------|------|-----------|-----|--------------------------------|-----------|
| Outer    | 2009 | 352_09LTM | 2   | Pista Palmata                  | 5         |
| Outer    | 2009 | 352_09LTM | 1   | Podarke Obscura                | 6         |
| Outer    | 2009 | 352_09LTM | 2   | Podarke Obscura                | 7         |
| Outer    | 2009 | 352_09LTM | 1   | Polycirrus Eximius             | 33        |
| Outer    | 2009 | 352_09LTM | 2   | Polycirrus Eximius             | 21        |
| Outer    | 2009 | 352_09LTM | 1   | Polycirrus Sp.                 | 32        |
| Outer    | 2009 | 352_09LTM | 2   | Polycirrus Sp.                 | 21        |
| Outer    | 2009 | 352_09LTM | 1   | Polygordius Sp.                | 4         |
| Outer    | 2009 | 352_09LTM | 2   | Polygordius Sp.                | 16        |
| Outer    | 2009 | 352_09LTM | 1   | Prionospio (Minuspio) Perkinsi | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Prionospio (Minuspio) Perkinsi | 4         |
| Outer    | 2009 | 352_09LTM | 1   | Procephalothrix Spiralis       | 9         |
| Outer    | 2009 | 352_09LTM | 2   | Procephalothrix Spiralis       | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Protodorvillea Gaspeensis      | 6         |
| Outer    | 2009 | 352_09LTM | 2   | Protodorvillea Gaspeensis      | 11        |
| Outer    | 2009 | 352_09LTM | 1   | Rudilemboides Naglei           | 13        |
| Outer    | 2009 | 352_09LTM | 2   | Rudilemboides Naglei           | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Sacoglossa                     | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Scoletoma Hebes                | 41        |
| Outer    | 2009 | 352_09LTM | 2   | Scoletoma Hebes                | 34        |
| Outer    | 2009 | 352_09LTM | 1   | Sphaerosyllis Longicauda       | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Spiochaetopterus Oculatus      | 5         |
| Outer    | 2009 | 352_09LTM | 2   | Spiochaetopterus Oculatus      | 10        |
| Outer    | 2009 | 352_09LTM | 1   | Tagelus Divisus                | 2         |
| Outer    | 2009 | 352_09LTM | 2   | Tagelus Divisus                | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Tectonatica Pusilla            | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Tectonatica Pusilla            | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Tellina Agilis                 | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Tellinidae                     | 1         |
| Outer    | 2009 | 352_09LTM | 2   | Tellinidae                     | 3         |
| Outer    | 2009 | 352_09LTM | 1   | Tetrastemma Candidum           | 2         |
| Outer    | 2009 | 352_09LTM | 1   | Tharyx Acutus                  | 5         |
| Outer    | 2009 | 352_09LTM | 2   | Tharyx Acutus                  | 27        |
| Outer    | 2009 | 352_09LTM | 2   | Upogebia Affinis               | 1         |
| Outer    | 2009 | 352_09LTM | 1   | Zygonemertes Virescens         | 2         |

**APPENDIX K. BENTHIC INFAUNAL SPECIES LISTS FROM THE 2009  
NBH LTM V SURVEY**

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**Woods Hole Group**

| NBH Name                    | ITIS Best Name              | Species       | Genus          | Family          | Order         | Class        | Phylum        | 1993 | 1995 | 1999 | 2004 | 2009 |
|-----------------------------|-----------------------------|---------------|----------------|-----------------|---------------|--------------|---------------|------|------|------|------|------|
| Acteocina canaliculata      | Acteocina canaliculata      | canaliculata  | Acteocina      | Cylichnidae     | Cephalaspidia | Gastropoda   | Mollusca      | X    | X    | X    | X    | X    |
| Actiniaria                  | Actiniaria                  |               |                |                 | Actiniaria    | Anthozoa     | Cnidaria      |      |      |      |      | X    |
| Actiniaria spp.             | Actiniaria                  |               |                |                 | Actiniaria    | Anthozoa     | Cnidaria      |      |      | X    |      |      |
| Actinothoe sp. 1            | Actinothoe                  |               | Actinothoe     | Sagartiidae     | Actiniaria    | Anthozoa     | Cnidaria      |      |      | X    |      |      |
| Aeginina longicornis        | Aeginina longicornis        | longicornis   | Aeginina       | Caprellidae     | Amphipoda     | Malacostraca | Arthropoda    |      |      |      | X    |      |
| Aetea sica                  | Aetea sica                  | sica          | Aetea          | Aeteidae        | Chelostomata  | Gymnolaemata | Ectoprocta    |      |      |      |      | X    |
| Aeverillia armata           | Aeverillia armata           | armata        | Aeverillia     | Walkeridae      | Ctenostomata  | Gymnolaemata | Ectoprocta    |      |      |      | X    | X    |
| Aeverillia setigera         | Aeverillia setigera         | setigera      | Aeverillia     | Walkeridae      | Ctenostomata  | Gymnolaemata | Ectoprocta    |      |      |      |      | X    |
| Aglaophamus neotenus        | Aglaophamus neotenus        | neotenus      | Aglaophamus    | Nephtyidae      | Aciculata     | Polychaeta   | Annelida      |      |      |      |      | X    |
| Amathia vidovici            | Amathia vidovici            | vidovici      | Amathia        | Vesiculariidae  | Ctenostomata  | Gymnolaemata | Ectoprocta    |      |      |      | X    |      |
| Ameroculodes sp.            | Ameroculodes                |               | Ameroculodes   | Dedicerotidae   | Amphipoda     | Malacostraca | Arthropoda    |      |      |      | X    |      |
| Ameroculodes sp. 1          | Ameroculodes                |               | Ameroculodes   | Dedicerotidae   | Amphipoda     | Malacostraca | Arthropoda    |      |      | X    |      |      |
| Ampelisca abdita            | Ampelisca abdita            | abdita        | Ampelisca      | Ampeliscidae    | Amphipoda     | Malacostraca | Arthropoda    | X    | X    | X    | X    | X    |
| Ampelisca macrocephala      | Ampelisca macrocephala      | macrocephala  | Ampelisca      | Ampeliscidae    | Amphipoda     | Malacostraca | Arthropoda    |      |      | X    |      |      |
| Ampelisca sp.               | Ampelisca                   |               | Ampelisca      | Ampeliscidae    | Amphipoda     | Malacostraca | Arthropoda    |      | X    |      |      |      |
| Ampelisca spp.              | Ampelisca                   |               | Ampelisca      | Ampeliscidae    | Amphipoda     | Malacostraca | Arthropoda    | X    |      | X    |      |      |
| Ampelisca vadorum           | Ampelisca vadorum           | vadorum       | Ampelisca      | Ampeliscidae    | Amphipoda     | Malacostraca | Arthropoda    | X    | X    | X    | X    | X    |
| Ampelisca verrilli          | Ampelisca verrilli          | verrilli      | Ampelisca      | Ampeliscidae    | Amphipoda     | Malacostraca | Arthropoda    | X    | X    | X    | X    | X    |
| Ampharete arctica           | Ampharete arctica           | arctica       | Ampharete      | Ampharetidae    | Canalipalpata | Polychaeta   | Annelida      | X    | X    |      |      |      |
| Ampharete finmarchica       | Ampharete finmarchica       | finmarchica   | Ampharete      | Ampharetidae    | Canalipalpata | Polychaeta   | Annelida      |      |      | X    | X    | X    |
| Ampharetidae                | Ampharetidae                |               |                | Ampharetidae    | Canalipalpata | Polychaeta   | Annelida      | X    |      |      | X    | X    |
| Ampharetidae spp.           | Ampharetidae                |               |                | Ampharetidae    | Canalipalpata | Polychaeta   | Annelida      |      |      | X    |      |      |
| Amphioplus abdita           | Amphioplus abdita           | abdita        | Amphioplus     | Amphiuridae     | Ophiurida     | Ophiuroidea  | Echinodermata |      | X    |      | X    | X    |
| Amphipoda                   | Amphipoda                   |               |                |                 | Amphipoda     | Malacostraca | Arthropoda    |      | X    |      |      |      |
| Amphipoda spp.              | Amphipoda                   |               |                |                 | Amphipoda     | Malacostraca | Arthropoda    |      |      | X    |      |      |
| Amphipoda: other            | Amphipoda                   |               |                |                 | Amphipoda     | Malacostraca | Arthropoda    | X    |      |      |      |      |
| Amphiporus angulatus        | Amphiporus angulatus        | angulatus     | Amphiporus     | Amphiporidae    | Hoplonemertea | Enopla       | Nemertea      |      |      | X    |      |      |
| Amphiporus bioculatus       | Amphiporus bioculatus       | bioculatus    | Amphiporus     | Amphiporidae    | Hoplonemertea | Enopla       | Nemertea      |      |      | X    | X    | X    |
| Amphiporus cruentatus       | Amphiporus cruentatus       | cruentatus    | Amphiporus     | Amphiporidae    | Hoplonemertea | Enopla       | Nemertea      |      |      | X    |      | X    |
| Amphiporus groenlandicus    | Amphiporus groenlandicus    | groenlandicus | Amphiporus     | Amphiporidae    | Hoplonemertea | Enopla       | Nemertea      |      |      | X    |      |      |
| Amphiporus ochraceus        | Amphiporus ochraceus        | ochraceus     | Amphiporus     | Amphiporidae    | Hoplonemertea | Enopla       | Nemertea      |      |      |      | X    |      |
| Amphiporus sp.              | Amphiporus                  |               | Amphiporus     | Amphiporidae    | Hoplonemertea | Enopla       | Nemertea      |      |      |      |      | X    |
| Amphitrite affinis          | Neoamphitrite affinis       | affinis       | Neoamphitrite  | Terebellidae    | Canalipalpata | Polychaeta   | Annelida      |      |      |      | X    |      |
| Amphitrite johnstoni        | Amphitrite johnstoni        | johnstoni     | Amphitrite     | Terebellidae    | Canalipalpata | Polychaeta   | Annelida      |      |      | X    |      |      |
| Ampithoe longimana          | Ampithoe longimana          | longimana     | Ampithoe       | Ampithoidae     | Amphipoda     | Malacostraca | Arthropoda    |      |      |      | X    | X    |
| Ampithoe rubricata          | Ampithoe rubricata          | rubricata     | Ampithoe       | Ampithoidae     | Amphipoda     | Malacostraca | Arthropoda    |      |      |      | X    |      |
| Ampithoe spp.               | Ampithoe                    |               | Ampithoe       | Ampithoidae     | Amphipoda     | Malacostraca | Arthropoda    |      |      | X    |      |      |
| Ampithoe valida             | Ampithoe valida             | valida        | Ampithoe       | Ampithoidae     | Amphipoda     | Malacostraca | Arthropoda    |      |      | X    |      | X    |
| Ampithoidae                 | Ampithoidae                 |               |                | Ampithoidae     | Amphipoda     | Malacostraca | Arthropoda    | X    |      |      |      |      |
| Anachis lafresnayi          | Anachis lafresnayi          | lafresnayi    | Anachis        | Columbellidae   | Neogastropoda | Gastropoda   | Mollusca      | X    | X    | X    | X    | X    |
| Anadara ovalis              | Anadara ovalis              | ovalis        | Anadara        | Arcidae         | Arcoida       | Bivalvia     | Mollusca      |      |      |      |      | X    |
| Anadara sp.                 | Anadara                     |               | Anadara        | Arcidae         | Arcoida       | Bivalvia     | Mollusca      |      | X    |      |      |      |
| Anadara transversa          | Anadara transversa          | transversa    | Anadara        | Arcidae         | Arcoida       | Bivalvia     | Mollusca      | X    | X    | X    | X    | X    |
| Anaitides arenae            | Anaitides                   |               | Anaitides      | Phyllococidae   | Aciculata     | Polychaeta   | Annelida      |      | X    |      |      |      |
| Ancistrosyllis groenlandica | Ancistrosyllis groenlandica | groenlandica  | Ancistrosyllis | Pilargidae      | Aciculata     | Polychaeta   | Annelida      | X    |      |      |      |      |
| Ancistrosyllis hartmanae    | Ancistrosyllis hartmanae    | hartmanae     | Ancistrosyllis | Pilargidae      | Aciculata     | Polychaeta   | Annelida      |      |      | X    | X    | X    |
| Ancula gibbosa              | Ancula gibbosa              | gibbosa       | Ancula         | Goniodorididae  | Nudibranchia  | Gastropoda   | Mollusca      |      |      |      |      | X    |
| Anomia simplex              | Anomia simplex              | simplex       | Anomia         | Anomiidae       | Ostreoida     | Bivalvia     | Mollusca      | X    | X    | X    | X    | X    |
| Anomia sp.                  | Anomia                      |               | Anomia         | Anomiidae       | Ostreoida     | Bivalvia     | Mollusca      |      | X    |      | X    | X    |
| Anomia spp.                 | Anomia                      |               | Anomia         | Anomiidae       | Ostreoida     | Bivalvia     | Mollusca      | X    |      |      |      |      |
| Anoplodactylus petiolatus   | Anoplodactylus petiolatus   | petiolatus    | Anoplodactylus | Phoxichilididae | Pantopoda     | Pycnogonida  | Arthropoda    |      |      |      |      | X    |
| Anthomedusae                | Anthomedusae                |               |                |                 | Hydroida      | Hydrozoa     | Cnidaria      |      |      |      | X    |      |
| Anthozoa                    | Anthozoa                    |               |                |                 |               | Anthozoa     | Cnidaria      | X    | X    |      |      | X    |
| Aphelochaeta marioni        | Aphelochaeta marioni        | marioni       | Aphelochaeta   | Cirratulidae    | Canalipalpata | Polychaeta   | Annelida      | X    | X    | X    | X    | X    |

## Woods Hole Group

| NBH Name                       | ITIS Best Name          | Species        | Genus        | Family          | Order           | Class            | Phylum          | 1993 | 1995 | 1999 | 2004 | 2009 |
|--------------------------------|-------------------------|----------------|--------------|-----------------|-----------------|------------------|-----------------|------|------|------|------|------|
| Aphelochaeta monilaris         | Aphelochaeta            |                | Aphelochaeta | Cirratulidae    | Canalipalpata   | Polychaeta       | Annelida        |      |      | X    |      |      |
| Apocorophium acutum            | Apocorophium acutum     | acutum         | Apocorophium | Corophiidae     | Amphipoda       | Malacostraca     | Arthropoda      | X    | X    | X    | X    | X    |
| Arabella iricolor              | Arabella iricolor       | iricolor       | Arabella     | Onenidae        | Aciculata       | Polychaeta       | Annelida        |      | X    | X    | X    | X    |
| Arbacia punctulata             | Arbacia punctulata      | punctulata     | Arbacia      | Arbaciidae      | Arbacioida      | Echinoidea       | Echinodermata   |      |      |      | X    |      |
| Archannelida                   | Aciculata               |                |              |                 | Aciculata       | Polychaeta       | Annelida        | X    | X    |      | X    |      |
| Arctica islandica              | Arctica islandica       | islandica      | Arctica      | Arcticidae      | Veneroida       | Bivalvia         | Mollusca        |      |      |      | X    |      |
| Aricidea (acmira) catherinae   | Acmira catherinae       | catherinae     | Acmira       | Paraonidae      |                 | Polychaeta       | Annelida        |      | X    |      | X    | X    |
| Aricidea (acmira) cerruti      | Acmira cerruti          | cerruti        | Acmira       | Paraonidae      |                 | Polychaeta       | Annelida        |      | X    |      | X    | X    |
| Aricidea catherinae            | Acmira catherinae       | catherinae     | Acmira       | Paraonidae      |                 | Polychaeta       | Annelida        | X    |      | X    |      |      |
| Aricidea cerrutii              | Aricidea cerrutii       | cerrutii       | Aricidea     | Paraonidae      |                 | Polychaeta       | Annelida        | X    |      |      |      |      |
| Aricidea quadrilobata          | Aricidea quadrilobata   | quadrilobata   | Aricidea     | Paraonidae      |                 | Polychaeta       | Annelida        |      | X    |      |      |      |
| Aricidea sp.                   | Aricidea                |                | Aricidea     | Paraonidae      |                 | Polychaeta       | Annelida        |      | X    |      | X    | X    |
| Aricidea spp.                  | Aricidea                |                | Aricidea     | Paraonidae      |                 | Polychaeta       | Annelida        | X    |      | X    |      |      |
| Asabellides oculata            | Asabellides oculata     | oculata        | Asabellides  | Ampharetidae    | Canalipalpata   | Polychaeta       | Annelida        |      |      |      |      | X    |
| Asciadiacea                    | Asciadiacea             |                |              |                 |                 | Asciadiacea      | Chordata        |      |      |      |      | X    |
| Ascophora                      | Ascophora               |                | Ascophora    | Typhloplanidae  | Neorhabdocoela  | Turbellaria      | Platyhelminthes |      |      |      | X    |      |
| Assiminea succinea             | Assiminea succinea      | succinea       | Assiminea    | Assimineidae    | Neotaenioglossa | Gastropoda       | Mollusca        |      |      |      | X    |      |
| Astarte castanea               | Astarte castanea        | castanea       | Astarte      | Astartidae      | Veneroida       | Bivalvia         | Mollusca        |      |      | X    |      |      |
| Asychis elongata               | Asychis elongata        | elongata       | Asychis      | Maldanidae      |                 | Polychaeta       | Annelida        |      | X    | X    |      |      |
| Autolytus fasciatus            | Autolytus fasciatus     | fasciatus      | Autolytus    | Syllidae        | Aciculata       | Polychaeta       | Annelida        |      |      |      | X    | X    |
| Autolytus prolifer             | Autolytus prolifera     | prolifera      | Autolytus    | Syllidae        | Aciculata       | Polychaeta       | Annelida        | X    | X    | X    |      | X    |
| Autolytus sp.                  | Autolytus               |                | Autolytus    | Syllidae        | Aciculata       | Polychaeta       | Annelida        |      |      |      |      | X    |
| Axiognathus squamatus          | Amphipholis squamata    | squamata       | Amphipholis  | Amphiphuridae   | Ophiurida       | Ophiuroidea      | Echinodermata   | X    |      | X    |      |      |
| Balanus crenatus               | Balanus crenatus        | crenatus       | Balanus      | Balanidae       | Sessilia        | Maxillopoda      | Arthropoda      | X    | X    |      | X    |      |
| Balanus eburneus               | Balanus eburneus        | eburneus       | Balanus      | Balanidae       | Sessilia        | Maxillopoda      | Arthropoda      |      | X    |      |      |      |
| Balanus improvisus             | Balanus improvisus      | improvisus     | Balanus      | Balanidae       | Sessilia        | Maxillopoda      | Arthropoda      | X    |      |      |      |      |
| Balanus sp.                    | Balanus                 |                | Balanus      | Balanidae       | Sessilia        | Maxillopoda      | Arthropoda      |      | X    |      |      | X    |
| Balanus venustus               | Balanus venustus        | venustus       | Balanus      | Balanidae       | Sessilia        | Maxillopoda      | Arthropoda      | X    | X    | X    | X    | X    |
| Barentsia gracilis             | Barentsia gracilis      | gracilis       | Barentsia    | Pedicellinidae  | Pedicellinida   | Pedicellinida_xx | Entoprocta      |      |      |      |      | X    |
| Batea catharinensis            | Batea catharinensis     | catharinensis  | Batea        | Bateidae        | Amphipoda       | Malacostraca     | Arthropoda      |      |      |      |      | X    |
| Batea catherinensis            | Batea catharinensis     | catharinensis  | Batea        | Bateidae        | Amphipoda       | Malacostraca     | Arthropoda      | X    | X    | X    | X    |      |
| Bittium alternatum             | Bittium alternatum      | alternatum     | Bittium      | Cerithiidae     | Neotaenioglossa | Gastropoda       | Mollusca        | X    | X    | X    | X    | X    |
| Bivalvia                       | Bivalvia                |                |              |                 |                 | Bivalvia         | Mollusca        |      | X    |      | X    | X    |
| Bivalvia spp.                  | Bivalvia                |                |              |                 |                 | Bivalvia         | Mollusca        |      |      | X    |      |      |
| Bivalvia: other - unidentified | Bivalvia                |                |              |                 |                 | Bivalvia         | Mollusca        | X    |      |      |      |      |
| Boccardiella hamata            | Boccardiella hamata     | hamata         | Boccardiella | Spionidae       | Canalipalpata   | Polychaeta       | Annelida        |      |      | X    | X    | X    |
| Boonea seminuda                | Boonea seminuda         | seminuda       | Boonea       | Pyramidellidae  | Heterostropha   | Gastropoda       | Mollusca        | X    | X    | X    | X    | X    |
| Boreotrophon clathratus        | Boreotrophon clathratus | clathratus     | Boreotrophon | Muricidae       | Neogastropoda   | Gastropoda       | Mollusca        |      |      |      |      | X    |
| Bougainvillidae                | Bougainvillidae         |                |              | Bougainvillidae | Hydroida        | Hydrozoa         | Cnidaria        |      |      |      |      | X    |
| Bowerbankia gracilis           | Bowerbankia gracilis    | gracilis       | Bowerbankia  | Vesiculariidae  | Ctenostomata    | Gymnolaemata     | Ectoprocta      |      |      |      | X    | X    |
| Bowerbankia imbricata          | Bowerbankia imbricata   | imbricata      | Bowerbankia  | Vesiculariidae  | Ctenostomata    | Gymnolaemata     | Ectoprocta      |      |      |      | X    | X    |
| Bowerbankia sp.                | Bowerbankia             |                | Bowerbankia  | Vesiculariidae  | Ctenostomata    | Gymnolaemata     | Ectoprocta      |      |      |      |      | X    |
| Brania clavata                 | Brania clavata          | clavata        | Brania       | Syllidae        | Aciculata       | Polychaeta       | Annelida        | X    | X    | X    | X    | X    |
| Brania wellfleetensis          | Brania wellfleetensis   | wellfleetensis | Brania       | Syllidae        | Aciculata       | Polychaeta       | Annelida        | X    | X    | X    | X    | X    |
| Bugula stolonifera             | Bugula stolonifera      | stolonifera    | Bugula       | Bugulidae       | Cheilostomata   | Gymnolaemata     | Ectoprocta      |      |      |      |      | X    |
| Bugula turrita                 | Bugula turrita          | turrita        | Bugula       | Bugulidae       | Cheilostomata   | Gymnolaemata     | Ectoprocta      |      |      |      | X    | X    |
| Busycon canaliculatum          | Busycon canaliculatus   | canaliculatus  | Busycon      | Melongenidae    | Neogastropoda   | Gastropoda       | Mollusca        |      |      |      |      | X    |
| Busycon carica                 | Busycon carica          | carica         | Busycon      | Melongenidae    | Neogastropoda   | Gastropoda       | Mollusca        |      |      | X    |      | X    |
| Byblis serrata                 | Byblis serrata          | serrata        | Byblis       | Ampeliscidae    | Amphipoda       | Malacostraca     | Arthropoda      | X    | X    |      | X    | X    |
| Cabira incerta                 | Cabira incerta          | incerta        | Cabira       | Pilargidae      | Aciculata       | Polychaeta       | Annelida        |      |      | X    | X    | X    |
| Caecum cooperi                 | Caecum cooperi          | cooperi        | Caecum       | Caecidae        | Neotaenioglossa | Gastropoda       | Mollusca        |      | X    |      |      |      |
| Caecum pulchellum              | Caecum pulchellum       | pulchellum     | Caecum       | Caecidae        | Neotaenioglossa | Gastropoda       | Mollusca        |      | X    |      | X    |      |
| Caecum sp.                     | Caecum                  |                | Caecum       | Caecidae        | Neotaenioglossa | Gastropoda       | Mollusca        |      | X    |      |      |      |
| Callinectes sapidus            | Callinectes sapidus     | sapidus        | Callinectes  | Portunidae      | Decapoda        | Malacostraca     | Arthropoda      |      |      | X    |      | X    |

**Woods Hole Group**

| NBH Name                      | ITIS Best Name            | Species       | Genus          | Family           | Order           | Class          | Phylum     | 1993 | 1995 | 1999 | 2004 | 2009 |
|-------------------------------|---------------------------|---------------|----------------|------------------|-----------------|----------------|------------|------|------|------|------|------|
| Calliopius laeviusculus       | Calliopius laeviusculus   | laeviusculus  | Calliopius     | Calliopiidae     | Amphipoda       | Malacostraca   | Arthropoda |      |      |      | X    |      |
| Callipallene brevirostris     | Callipallene brevirostris | brevirostris  | Callipallene   | Callipallenidae  | Pantopoda       | Pycnogonida    | Arthropoda |      |      |      |      | X    |
| Campanulariidae               | Campanulariidae           |               |                | Campanulariidae  | Hydroida        | Hydrozoa       | Cnidaria   |      |      |      | X    | X    |
| Cancer irroratus              | Cancer irroratus          | irroratus     | Cancer         | Cancridae        | Decapoda        | Malacostraca   | Arthropoda |      |      | X    | X    |      |
| Cancer spp.                   | Cancer                    |               | Cancer         | Cancridae        | Decapoda        | Malacostraca   | Arthropoda |      |      | X    |      |      |
| Capitella capitata            | Capitella capitata        | capitata      | Capitella      | Capitellidae     |                 | Polychaeta     | Annelida   |      |      |      |      | X    |
| Capitella capitata complex    | Capitella capitata        | capitata      | Capitella      | Capitellidae     |                 | Polychaeta     | Annelida   | X    | X    | X    | X    |      |
| Capitella jonesi              | Capitellides jonesi       | jonesi        | Capitellides   | Capitellidae     |                 | Polychaeta     | Annelida   |      |      | X    | X    | X    |
| Capitellidae                  | Capitellidae              |               |                | Capitellidae     |                 | Polychaeta     | Annelida   | X    | X    |      |      |      |
| Capitellidae spp.             | Capitellidae              |               |                | Capitellidae     |                 | Polychaeta     | Annelida   |      |      | X    |      |      |
| Caprella penantis             | Caprella penantis         | penantis      | Caprella       | Caprellidae      | Amphipoda       | Malacostraca   | Arthropoda |      | X    |      | X    | X    |
| Caprellidae                   | Caprellidae               |               |                | Caprellidae      | Amphipoda       | Malacostraca   | Arthropoda |      | X    |      |      |      |
| Carazziella hobsonae          | Carazziella hobsonae      | hobsonae      | Carazziella    | Spionidae        | Canalipalpata   | Polychaeta     | Annelida   |      |      | X    | X    | X    |
| Carinoma tremaphoros          | Carinoma tremaphoros      | tremaphoros   | Carinoma       | Carinomidae      | Paleonemertea   | Anopla         | Nemertea   |      |      | X    |      | X    |
| Carinomella lactea            | Carinomella lactea        | lactea        | Carinomella    | Tubulariidae     | Paleonemertea   | Anopla         | Nemertea   |      |      | X    |      |      |
| Caulieriella cf. killariensis | Caulieriella killariensis | killariensis  | Caulieriella   | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   | X    | X    |      | X    | X    |
| Caulieriella sp.              | Caulieriella              |               | Caulieriella   | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   | X    | X    |      | X    | X    |
| Caulieriella sp. a            | Caulieriella              |               | Caulieriella   | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   |      |      | X    |      |      |
| Cerapus sp. a                 | Cerapus                   |               | Cerapus        | Corophiidae      | Amphipoda       | Malacostraca   | Arthropoda |      |      |      |      | X    |
| Cerapus tubularis             | Cerapus tubularis         | tubularis     | Cerapus        | Corophiidae      | Amphipoda       | Malacostraca   | Arthropoda |      |      |      | X    |      |
| Cerastoderma pinnulatum       | Cerastoderma pinnulatum   | pinnulatum    | Cerastoderma   | Cardidae         | Veneroida       | Bivalvia       | Mollusca   | X    | X    | X    | X    | X    |
| Cerebratulus lacteus          | Cerebratulus lacteus      | lacteus       | Cerebratulus   | Lineidae         | Heteronemertea  | Anopla         | Nemertea   |      |      | X    | X    | X    |
| Cerebratulus sp.              | Cerebratulus              |               | Cerebratulus   | Lineidae         | Heteronemertea  | Anopla         | Nemertea   |      |      |      | X    |      |
| Cerebratulus spp.             | Cerebratulus              |               | Cerebratulus   | Lineidae         | Heteronemertea  | Anopla         | Nemertea   |      |      | X    |      |      |
| Ceriantharia                  | Ceriantharia              |               |                |                  | Ceriantharia    | Anthozoa       | Cnidaria   |      |      |      | X    | X    |
| Ceriantheopsis americanus     | Ceriantheopsis americana  | americana     | Ceriantheopsis | Cerianthidae     | Ceriantharia    | Anthozoa       | Cnidaria   |      | X    | X    |      |      |
| Cerithiopsis emersonii        | Cerithiopsis emersonii    | emersonii     | Cerithiopsis   | Cerithiopsidae   | Neotaenioglossa | Gastropoda     | Mollusca   |      |      |      |      | X    |
| Chaetopleura apiculata        | Chaetopleura apiculata    | apiculata     | Chaetopleura   | Ischnochitonidae | Neoloricata     | Polyplocophora | Mollusca   | X    | X    | X    | X    | X    |
| Chaetozone sp.                | Chaetozone                |               | Chaetozone     | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   | X    | X    |      | X    | X    |
| Chaetozone spp.               | Chaetozone                |               | Chaetozone     | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   |      |      | X    |      |      |
| Chordata                      | Chordata                  |               |                |                  |                 |                | Chordata   |      | X    |      |      |      |
| Cirratulidae                  | Cirratulidae              |               |                | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   | X    | X    |      | X    | X    |
| Cirratulidae spp.             | Cirratulidae              |               |                | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   |      |      | X    |      |      |
| Cirratulus grandis            | Cirratulus grandis        | grandis       | Cirratulus     | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   |      |      |      |      | X    |
| Cirratulus sp.                | Cirratulus                |               | Cirratulus     | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   | X    | X    |      |      |      |
| Cirratulus sp.1               | Cirratulus                |               | Cirratulus     | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   |      |      | X    |      |      |
| Ciriformia grandis            | Cirratulus grandis        | grandis       | Cirratulus     | Cirratulidae     | Canalipalpata   | Polychaeta     | Annelida   |      |      | X    | X    |      |
| Cirrophorus furcatus          | Cirrophorus furcatus      | furcatus      | Cirrophorus    | Paraonidae       |                 | Polychaeta     | Annelida   |      |      | X    | X    | X    |
| Cirrophorus lyriformis        | Cirrophorus lyriformis    | lyriformis    | Cirrophorus    | Paraonidae       |                 | Polychaeta     | Annelida   | X    | X    |      |      |      |
| Clinocardium ciliatum         | Clinocardium ciliatum     | ciliatum      | Clinocardium   | Cardidae         | Veneroida       | Bivalvia       | Mollusca   |      |      |      |      | X    |
| Cliona celata                 | Cliona celata             | celata        | Cliona         | Clionidae        | Hadromerida     | Demospongiae   | Porifera   |      |      |      | X    | X    |
| Cliona lobata                 | Cliona lobata             | lobata        | Cliona         | Clionidae        | Hadromerida     | Demospongiae   | Porifera   |      |      |      | X    |      |
| Cliona vastifica              | Cliona vastifica          | vastifica     | Cliona         | Clionidae        | Hadromerida     | Demospongiae   | Porifera   |      |      |      | X    | X    |
| Clymenella torquata           | Clymenella torquata       | torquata      | Clymenella     | Maldanidae       |                 | Polychaeta     | Annelida   | X    | X    | X    | X    | X    |
| Clytia gracilis               | Clytia gracilis           | gracilis      | Clytia         | Campanulariidae  | Hydroida        | Hydrozoa       | Cnidaria   |      |      |      | X    | X    |
| Clytia hemisphaerica          | Clytia hemisphaerica      | hemisphaerica | Clytia         | Campanulariidae  | Hydroida        | Hydrozoa       | Cnidaria   |      |      |      |      | X    |
| Conopeum truiti               | Conopeum truiti           | truiti        | Conopeum       | Membraniporidae  | Chelostomata    | Gymnolaemata   | Ectoprocta |      |      |      |      | X    |
| Corbula contracta             | Corbula contracta         | contracta     | Corbula        | Corbulidae       | Myoida          | Bivalvia       | Mollusca   |      | X    | X    | X    | X    |
| Corophiidae spp.              | Corophiidae               |               |                | Corophiidae      | Amphipoda       | Malacostraca   | Arthropoda |      |      | X    |      |      |
| Corophium sp.                 | Corophium                 |               | Corophium      | Corophiidae      | Amphipoda       | Malacostraca   | Arthropoda |      | X    |      |      |      |
| Corophium spp.                | Corophium                 |               | Corophium      | Corophiidae      | Amphipoda       | Malacostraca   | Arthropoda | X    |      |      |      |      |
| Coryphella pellucida          | Flabellina pellucida      | pellucida     | Flabellina     | Flabellinidae    | Nudibranchia    | Gastropoda     | Mollusca   |      |      | X    |      |      |
| Coryphella rufibranchialis    | Flabellina verrucosa      | verrucosa     | Flabellina     | Flabellinidae    | Nudibranchia    | Gastropoda     | Mollusca   |      |      | X    |      |      |
| Coryphella sp.                | Coryphella                |               | Coryphella     | Flabellinidae    | Nudibranchia    | Gastropoda     | Mollusca   |      |      |      |      | X    |

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| NBH Name                            | ITIS Best Name           | Species        | Genus           | Family          | Order           | Class         | Phylum        | 1993 | 1995 | 1999 | 2004 | 2009 |
|-------------------------------------|--------------------------|----------------|-----------------|-----------------|-----------------|---------------|---------------|------|------|------|------|------|
| Crangon septemspinosus              | Crangon septemspinosus   | septemspinosus | Crangon         | Crangonidae     | Decapoda        | Malacostraca  | Arthropoda    | X    |      | X    | X    | X    |
| Crangonyx pseudogracilis            | Crangonyx pseudogracilis | pseudogracilis | Crangonyx       | Crangonyctidae  | Amphipoda       | Malacostraca  | Arthropoda    |      |      | X    |      |      |
| Crassikorophium bonelli             | Crassikorophium bonelli  | bonelli        | Crassikorophium | Corophiidae     | Amphipoda       | Malacostraca  | Arthropoda    |      | X    |      |      |      |
| Crassinella lunulata                | Crassinella lunulata     | lunulata       | Crassinella     | Crassatellidae  | Veneroida       | Bivalvia      | Mollusca      | X    | X    | X    | X    | X    |
| Crassostrea virginica               | Crassostrea virginica    | virginica      | Crassostrea     | Ostreidae       | Ostreoida       | Bivalvia      | Mollusca      | X    | X    | X    | X    | X    |
| Crepidula convexa                   | Crepidula convexa        | convexa        | Crepidula       | Calyptraeidae   | Neotaenioglossa | Gastropoda    | Mollusca      | X    | X    | X    | X    | X    |
| Crepidula fornicata                 | Crepidula fornicata      | fornicata      | Crepidula       | Calyptraeidae   | Neotaenioglossa | Gastropoda    | Mollusca      | X    | X    | X    | X    | X    |
| Crepidula plana                     | Crepidula plana          | plana          | Crepidula       | Calyptraeidae   | Neotaenioglossa | Gastropoda    | Mollusca      | X    | X    | X    | X    | X    |
| Crepidula sp.                       | Crepidula                |                | Crepidula       | Calyptraeidae   | Neotaenioglossa | Gastropoda    | Mollusca      |      | X    |      | X    | X    |
| Crepidula spp.                      | Crepidula                |                | Crepidula       | Calyptraeidae   | Neotaenioglossa | Gastropoda    | Mollusca      | X    |      | X    |      |      |
| Cryptosula pallasiana               | Cryptosula pallasiana    | pallasiana     | Cryptosula      | Cryptosulidae   | Cheilostomata   | Gymnolaemata  | Ectoprocta    |      |      |      | X    | X    |
| Cumingia tellinoides                | Cumingia tellinoides     | tellinoides    | Cumingia        | Semelidae       | Veneroida       | Bivalvia      | Mollusca      | X    | X    | X    | X    | X    |
| Cyclaspis varians                   | Cyclaspis varians        | variens        | Cyclaspis       | Bodotriidae     | Cumacea         | Malacostraca  | Arthropoda    |      |      |      | X    |      |
| Cyclopoida                          | Cyclopoida               |                |                 |                 | Cyclopoida      | Maxillopoda   | Arthropoda    |      |      |      |      | X    |
| Cylichna oryza                      | Cylichna oryza           | oryza          | Cylichna        | Cylichnidae     | Cephalaspeida   | Gastropoda    | Mollusca      |      |      | X    | X    | X    |
| Cymadusa compta                     | Cymadusa compta          | compta         | Cymadusa        | Ampithoidae     | Amphipoda       | Malacostraca  | Arthropoda    | X    | X    | X    | X    | X    |
| Decapoda                            | Decapoda                 |                |                 |                 | Decapoda        | Malacostraca  | Arthropoda    | X    |      |      |      |      |
| Decapoda spp.                       | Decapoda                 |                |                 |                 | Decapoda        | Malacostraca  | Arthropoda    |      |      | X    |      |      |
| Demonax microphthalmus              | Demonax microphthalmus   | microphthalmus | Demonax         | Sabellidae      | Canalipalpata   | Polychaeta    | Annelida      |      |      |      |      | X    |
| Diaphana minuta                     | Diaphana minuta          | minuta         | Diaphana        | Diaphanidae     | Cephalaspeida   | Gastropoda    | Mollusca      |      |      | X    |      |      |
| Diastylis polita                    | Diastylis polita         | polita         | Diastylis       | Diastylidae     | Cumacea         | Malacostraca  | Arthropoda    |      |      |      | X    |      |
| Diopatra cuprea                     | Diopatra cuprea          | cuprea         | Diopatra        | Onuphidae       | Aciculata       | Polychaeta    | Annelida      | X    | X    | X    |      | X    |
| Dipolydora caulleryi                | Polydora caulleryi       | caulleryi      | Polydora        | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      | X    | X    |      |      |      |
| Dipolydora commensalis              | Polydora commensalis     | commensalis    | Polydora        | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    |      |      |
| Dipolydora concharum                | Polydora concharum       | concharum      | Polydora        | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    |      |      |
| Dipolydora giardi                   | Polydora giardi          | giardi         | Polydora        | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    |      | X    |
| Dipolydora socialis                 | Polydora socialis        | socialis       | Polydora        | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Dipolydora sp.                      | Polydora                 |                | Polydora        | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      |      |      |      |      | X    |
| Dodecaceria coralii                 | Dodecaceria coralii      | coralii        | Dodecaceria     | Cirratulidae    | Canalipalpata   | Polychaeta    | Annelida      |      |      |      |      | X    |
| Dodecaceria sp.                     | Dodecaceria              |                | Dodecaceria     | Cirratulidae    | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      | X    | X    |
| Dodecaceria spp.                    | Dodecaceria              |                | Dodecaceria     | Cirratulidae    | Canalipalpata   | Polychaeta    | Annelida      | X    |      | X    |      |      |
| Dolichopodidae                      | Dolichopodidae           |                |                 | Dolichopodidae  | Diptera         | Insecta       | Arthropoda    | X    |      |      |      |      |
| Dorvillea (schistomerings) annulata | Schistomerings annulata  | annulata       | Schistomerings  | Dorvilleidae    | Aciculata       | Polychaeta    | Annelida      |      |      |      | X    | X    |
| Dorvillea (schistomerings) rudolphi | Schistomerings rudolphi  | rudolphi       | Schistomerings  | Dorvilleidae    | Aciculata       | Polychaeta    | Annelida      | X    | X    | X    |      |      |
| Doto coronata                       | Doto coronata            | coronata       | Doto            | Dotoidae        | Nudibranchia    | Gastropoda    | Mollusca      |      |      |      |      | X    |
| Drilonereis longa                   | Drilonereis longa        | longa          | Drilonereis     | Onchidae        | Aciculata       | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Dynamena pumila                     | Dynamena pumila          | pumila         | Dynamena        | Sertulariidae   | Hydrozoa        | Hydrozoa      | Cnidaria      |      |      |      | X    |      |
| Dyspanopeus sayi                    | Dyspanopeus sayi         | sayi           | Dyspanopeus     | Panopeidae      | Decapoda        | Malacostraca  | Arthropoda    | X    | X    | X    | X    | X    |
| Echinoidea                          | Echinoidea               |                |                 |                 |                 | Echinoidea    | Echinodermata |      |      |      | X    |      |
| Edotia sp.                          | Edotia                   |                | Edotia          | Idoteidae       | Isopoda         | Malacostraca  | Arthropoda    |      |      |      |      | X    |
| Edotia triloba                      | Edotia triloba           | triloba        | Edotia          | Idoteidae       | Isopoda         | Malacostraca  | Arthropoda    | X    | X    | X    | X    |      |
| Edwardsia elegans                   | Edwardsia elegans        | elegans        | Edwardsia       | Edwardsiidae    | Actiniaria      | Anthozoa      | Cnidaria      |      |      | X    | X    | X    |
| Elasmopus laevis                    | Elasmopus laevis         | laevis         | Elasmopus       | Melitidae       | Amphipoda       | Malacostraca  | Arthropoda    | X    |      | X    | X    | X    |
| Elasmopus levis                     | Elasmopus levis          | levis          | Elasmopus       | Melitidae       | Amphipoda       | Malacostraca  | Arthropoda    |      | X    |      |      |      |
| Electra pilosa                      | Electra pilosa           | pilosa         | Electra         | Electridae      | Cheilostomata   | Gymnolaemata  | Ectoprocta    |      |      |      |      | X    |
| Ensis directus                      | Ensis directus           | directus       | Ensis           | Pharidae        | Veneroida       | Bivalvia      | Mollusca      | X    |      | X    |      | X    |
| Enteropneusta                       | Enteropneusta            |                |                 |                 |                 | Enteropneusta | Hemichordata  | X    | X    |      |      |      |
| Eobrolgus spinosus                  | Eobrolgus spinosus       | spinosus       | Eobrolgus       | Phoxocephalidae | Amphipoda       | Malacostraca  | Arthropoda    | X    | X    | X    | X    | X    |
| Epitomapta roseola                  | Leptosynapta roseola     | roseola        | Leptosynapta    | Synaptidae      | Apodida         | Holothuroidea | Echinodermata |      |      | X    | X    | X    |
| Epitonium angulatum                 | Epitonium angulatum      | angulatum      | Epitonium       | Epitonidae      | Neotaenioglossa | Gastropoda    | Mollusca      |      |      |      |      | X    |
| Epitonium dallianum                 | Epitonium dallianum      | dallianum      | Epitonium       | Epitonidae      | Neotaenioglossa | Gastropoda    | Mollusca      |      |      |      |      | X    |
| Epitonium multistriatum             | Epitonium multistriatum  | multistriatum  | Epitonium       | Epitonidae      | Neotaenioglossa | Gastropoda    | Mollusca      |      |      |      |      | X    |
| Epizoanthus sp.                     | Epizoanthus              |                | Epizoanthus     | Epizoanthidae   | Zoanthidea      | Anthozoa      | Cnidaria      |      |      |      | X    |      |
| Erichsonella filiformis             | Erichsonella filiformis  | filiformis     | Erichsonella    | Idoteidae       | Isopoda         | Malacostraca  | Arthropoda    |      |      |      | X    | X    |

**Woods Hole Group**

| NBH Name                  | ITIS Best Name            | Species      | Genus        | Family         | Order           | Class              | Phylum          | 1993 | 1995 | 1999 | 2004 | 2009 |
|---------------------------|---------------------------|--------------|--------------|----------------|-----------------|--------------------|-----------------|------|------|------|------|------|
| Erichthonius brasiliensis | Erichthonius brasiliensis | brasiliensis | Erichthonius | Corophiidae    | Amphipoda       | Malacostraca       | Arthropoda      |      | X    |      |      |      |
| Erichthonius sp.          | Erichthonius              |              | Erichthonius | Corophiidae    | Amphipoda       | Malacostraca       | Arthropoda      |      | X    |      |      |      |
| Erichthonius spp.         | Erichthonius              |              | Erichthonius | Corophiidae    | Amphipoda       | Malacostraca       | Arthropoda      | X    |      |      |      |      |
| Erichthonius brasiliensis | Erichthonius brasiliensis | brasiliensis | Erichthonius | Corophiidae    | Amphipoda       | Malacostraca       | Arthropoda      |      |      | X    | X    | X    |
| Erichthonius fasciatus    | Erichthonius fasciatus    | fasciatus    | Erichthonius | Corophiidae    | Amphipoda       | Malacostraca       | Arthropoda      |      |      |      | X    |      |
| Erichthonius sp.          | Erichthonius              |              | Erichthonius | Corophiidae    | Amphipoda       | Malacostraca       | Arthropoda      |      |      |      | X    |      |
| Eteone heteropoda         | Eteone heteropoda         | heteropoda   | Eteone       | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        | X    | X    | X    | X    | X    |
| Eteone longa              | Eteone longa              | longa        | Eteone       | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        |      |      |      | X    |      |
| Eteone sp.                | Eteone                    |              | Eteone       | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        |      | X    |      |      | X    |
| Eteone spp.               | Eteone                    |              | Eteone       | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        |      |      | X    |      |      |
| Eteone trilineata         | Eteone trilineata         | trilineata   | Eteone       | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        |      |      | X    |      |      |
| Euclymene collaris        | Euclymene collaris        | collaris     | Euclymene    | Maldanidae     |                 | Polychaeta         | Annelida        |      | X    | X    | X    | X    |
| Euclymene zonalis         | Euclymene zonalis         | zonalis      | Euclymene    | Maldanidae     |                 | Polychaeta         | Annelida        | X    |      |      |      |      |
| Eulalia bilineata         | Eulalia bilineata         | bilineata    | Eulalia      | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        | X    |      | X    | X    | X    |
| Eulalia viroidis          | Eulalia viroidis          | viroidis     | Eulalia      | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        |      | X    |      | X    |      |
| Eumida sanguinea          | Eumida sanguinea          | sanguinea    | Eumida       | Phyllococidae  | Aciculata       | Polychaeta         | Annelida        | X    | X    | X    | X    | X    |
| Eunicidae                 | Eunicidae                 |              | Eunicidae    | Aciculata      | Aciculata       | Polychaeta         | Annelida        | X    |      |      | X    | X    |
| Euplana gracilis          | Euplana gracilis          | gracilis     | Euplana      | Leptoplanidae  | Polycladida     | Turbellaria        | Platyhelminthes |      |      |      |      | X    |
| Eupleura caudata          | Eupleura caudata          | caudata      | Eupleura     | Muricidae      | Neogastropoda   | Gastropoda         | Mollusca        | X    | X    |      |      | X    |
| Euprognatha rastellifera  | Euprognatha rastellifera  | rastellifera | Euprognatha  | Inachoididae   | Decapoda        | Malacostraca       | Arthropoda      |      |      |      | X    |      |
| Eurypanopeus depressus    | Eurypanopeus depressus    | depressus    | Eurypanopeus | Panopeidae     | Decapoda        | Malacostraca       | Arthropoda      | X    | X    | X    |      |      |
| Eusyllis lamelligera      | Eusyllis lamelligera      | lamelligera  | Eusyllis     | Syllidae       | Aciculata       | Polychaeta         | Annelida        |      |      | X    |      |      |
| Exogone dispar            | Exogone dispar            | dispar       | Exogone      | Syllidae       | Aciculata       | Polychaeta         | Annelida        | X    | X    | X    | X    | X    |
| Exogone hebes             | Exogone hebes             | hebes        | Exogone      | Syllidae       | Aciculata       | Polychaeta         | Annelida        | X    |      |      |      |      |
| Exogone sp.               | Exogone                   |              | Exogone      | Syllidae       | Aciculata       | Polychaeta         | Annelida        |      | X    |      |      | X    |
| Exogone spp.              | Exogone                   |              | Exogone      | Syllidae       | Aciculata       | Polychaeta         | Annelida        | X    |      | X    |      |      |
| Exogone verugera          | Exogone verugera          | verugera     | Exogone      | Syllidae       | Aciculata       | Polychaeta         | Annelida        | X    |      |      |      | X    |
| Fabricia sabella          | Fabricia sabella          | sabella      | Fabricia     | Sabellidae     | Canalipalpata   | Polychaeta         | Annelida        | X    |      |      |      |      |
| Fargoa bartschi           | Fargoa bartschi           | bartschi     | Fargoa       | Pyramidellidae | Heterostropha   | Gastropoda         | Mollusca        |      |      | X    | X    | X    |
| Gammarus daiberi          | Gammarus daiberi          | daiberi      | Gammarus     | Gammaridae     | Amphipoda       | Malacostraca       | Arthropoda      |      | X    |      |      |      |
| Gammarus mucronatus       | Gammarus mucronatus       | mucronatus   | Gammarus     | Gammaridae     | Amphipoda       | Malacostraca       | Arthropoda      | X    | X    | X    | X    | X    |
| Gammarus oceanicus        | Gammarus oceanicus        | oceanicus    | Gammarus     | Gammaridae     | Amphipoda       | Malacostraca       | Arthropoda      |      |      | X    |      |      |
| Gammarus sp.              | Gammarus                  |              | Gammarus     | Gammaridae     | Amphipoda       | Malacostraca       | Arthropoda      |      | X    |      |      |      |
| Gammarus spp.             | Gammarus                  |              | Gammarus     | Gammaridae     | Amphipoda       | Malacostraca       | Arthropoda      | X    |      | X    |      |      |
| Gastropoda                | Gastropoda                |              |              |                |                 | Gastropoda         | Mollusca        |      | X    |      | X    | X    |
| Gastropoda spp.           | Gastropoda                |              |              |                |                 | Gastropoda         | Mollusca        |      |      | X    |      |      |
| Gastropoda: other         | Gastropoda                |              |              |                |                 | Gastropoda         | Mollusca        | X    |      |      |      |      |
| Gemma gemma               | Gemma gemma               | gemma        | Gemma        | Veneridae      | Veneroida       | Bivalvia           | Mollusca        | X    | X    | X    | X    | X    |
| Geukensia demissa         | Geukensia demissa         | demissa      | Geukensia    | Mytilidae      | Mytiloidea      | Bivalvia           | Mollusca        |      | X    |      |      |      |
| Gilvossius setimanus      | Gilvossius setimanus      | setimanus    | Gilvossius   | Callianassidae | Decapoda        | Malacostraca       | Arthropoda      |      |      |      |      | X    |
| Glycera americana         | Glycera americana         | americana    | Glycera      | Glyceridae     | Aciculata       | Polychaeta         | Annelida        | X    | X    | X    | X    | X    |
| Glycera dibranchiata      | Glycera dibranchiata      | dibranchiata | Glycera      | Glyceridae     | Aciculata       | Polychaeta         | Annelida        | X    | X    |      | X    | X    |
| Glycera sp.               | Glycera                   |              | Glycera      | Glyceridae     | Aciculata       | Polychaeta         | Annelida        |      | X    |      | X    | X    |
| Glycera sp. 1             | Glycera                   |              | Glycera      | Glyceridae     | Aciculata       | Polychaeta         | Annelida        |      |      | X    |      |      |
| Glycera spp.              | Glycera                   |              | Glycera      | Glyceridae     | Aciculata       | Polychaeta         | Annelida        | X    |      |      |      |      |
| Glyceridae spp.           | Glyceridae                |              |              | Glyceridae     | Aciculata       | Polychaeta         | Annelida        |      | X    |      |      |      |
| Glycinde solitaria        | Glycinde solitaria        | solitaria    | Glycinde     | Goniadidae     | Aciculata       | Polychaeta         | Annelida        | X    | X    | X    | X    | X    |
| Golfingia sp.             | Golfingia                 |              | Golfingia    | Golfingiidae   | Golfingiidae_xx | Golfingiidae_xx_xx | Sipuncula       |      |      |      |      | X    |
| Goniadidae                | Goniadidae                |              |              | Goniadidae     | Aciculata       | Polychaeta         | Annelida        | X    | X    |      |      |      |
| Goniadidae spp.           | Goniadidae                |              |              | Goniadidae     | Aciculata       | Polychaeta         | Annelida        |      |      | X    |      |      |
| Gyptis cf. vittata        | Gyptis vittata            | vittata      | Gyptis       | Hesionidae     | Aciculata       | Polychaeta         | Annelida        |      | X    | X    | X    |      |
| Gyptis crypta             | Gyptis                    |              | Gyptis       | Hesionidae     | Aciculata       | Polychaeta         | Annelida        | X    |      |      |      |      |
| Gyptis vittata            | Gyptis vittata            | vittata      | Gyptis       | Hesionidae     | Aciculata       | Polychaeta         | Annelida        |      |      |      |      | X    |
| Halecium halecinum        | Halecium halecinum        | halecinum    | Halecium     | Haleciidae     | Leptothecatae   | Hydrozoa           | Cnidaria        |      |      |      |      | X    |

**Woods Hole Group**

| NBH Name                    | ITIS Best Name              | Species       | Genus           | Family             | Order             | Class         | Phylum        | 1993 | 1995 | 1999 | 2004 | 2009 |
|-----------------------------|-----------------------------|---------------|-----------------|--------------------|-------------------|---------------|---------------|------|------|------|------|------|
| Halecium sp.                | Halecium                    |               | Halecium        | Haleciidae         | Hydroida          | Hydrozoa      | Cnidaria      |      |      |      | X    | X    |
| Halichondria bowerbanki     | Halichondria bowerbanki     | bowerbanki    | Halichondria    | Halichondriidae    | Halichondrida     | Demospongiae  | Porifera      |      |      |      | X    |      |
| Haliclona loosanoffi        | Haliclona loosanoffi        | loosanoffi    | Haliclona       | Halicionidae       | Haplosclerida     | Demospongiae  | Porifera      |      |      |      |      | X    |
| Haloclava producta          | Haloclava producta          | producta      | Haloclava       | Haloclavidae       | Actiniaria        | Anthozoa      | Cnidaria      |      |      |      | X    | X    |
| Haminoea solitaria          | Haminoea solitaria          | solitaria     | Haminoea        | Haminoeidae        | Cephalaspidea     | Gastropoda    | Mollusca      | X    | X    | X    | X    | X    |
| Harmothoe ? nodosa          | Harmothoe nodosa            | nodosa        | Harmothoe       | Polynoidae         | Aciculata         | Polychaeta    | Annelida      |      |      | X    |      |      |
| Harmothoe extenuata         | Harmothoe extenuata         | extenuata     | Harmothoe       | Polynoidae         | Aciculata         | Polychaeta    | Annelida      | X    |      | X    | X    | X    |
| Harmothoe imbricata         | Harmothoe imbricata         | imbricata     | Harmothoe       | Polynoidae         | Aciculata         | Polychaeta    | Annelida      |      | X    |      | X    | X    |
| Harmothoe lunulata          | Malmgreniella lunulata      | lunulata      | Malmgreniella   | Polynoidae         | Aciculata         | Polychaeta    | Annelida      |      |      |      |      | X    |
| Harmothoe maccginitiei      | Harmothoe maccginitiei      | maccginitiei  | Harmothoe       | Polynoidae         | Aciculata         | Polychaeta    | Annelida      |      |      |      |      | X    |
| Harmothoe sp.               | Harmothoe                   |               | Harmothoe       | Polynoidae         | Aciculata         | Polychaeta    | Annelida      |      |      |      | X    | X    |
| Harpacticoida               | Harpacticoida               |               |                 |                    | Harpacticoida     | Maxillopoda   | Arthropoda    | X    | X    |      |      | X    |
| Hediste diversicolor        | Hediste diversicolor        | diversicolor  | Hediste         | Nereididae         | Aciculata         | Polychaeta    | Annelida      |      |      |      | X    | X    |
| Hemicyclops sp.             | Hemicyclops                 |               | Hemicyclops     | Clausidiidae       | Poecilostomatoida | Maxillopoda   | Arthropoda    |      |      |      |      | X    |
| Hesionidae                  | Hesionidae                  |               |                 | Hesionidae         | Aciculata         | Polychaeta    | Annelida      |      |      | X    |      |      |
| Heterocrypta granulata      | Heterocrypta granulata      | granulata     | Heterocrypta    | Parthenopidae      | Decapoda          | Malacostraca  | Arthropoda    |      |      |      | X    | X    |
| Heteromastus filiformis     | Heteromastus filiformis     | filiformis    | Heteromastus    | Capitellidae       |                   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Heteromysis formosa         | Heteromysis formosa         | formosa       | Heteromysis     | Mysidae            | Mysida            | Malacostraca  | Arthropoda    | X    | X    | X    | X    | X    |
| Hexapanopeus angustifrons   | Hexapanopeus angustifrons   | angustifrons  | Hexapanopeus    | Panopeidae         | Decapoda          | Malacostraca  | Arthropoda    |      | X    | X    | X    | X    |
| Hiatella sp.                | Hiatella                    |               | Hiatella        | Hiatellidae        | Myoidea           | Bivalvia      | Mollusca      |      | X    |      |      |      |
| Hippolyte pleuracanthus     | Hippolyte pleuracanthus     | pleuracanthus | Hippolyte       | Hippolytidae       | Decapoda          | Malacostraca  | Arthropoda    |      |      |      | X    |      |
| Hippolyte sp.               | Hippolyte                   |               | Hippolyte       | Hippolytidae       | Decapoda          | Malacostraca  | Arthropoda    |      |      |      |      | X    |
| Hippolyte spp.              | Hippolyte                   |               | Hippolyte       | Hippolytidae       | Decapoda          | Malacostraca  | Arthropoda    |      |      | X    |      |      |
| Hippolyte zostericola       | Hippolyte zostericola       | zostericola   | Hippolyte       | Hippolytidae       | Decapoda          | Malacostraca  | Arthropoda    |      | X    | X    | X    | X    |
| Hippolytidae                | Hippolytidae                |               |                 | Hippolytidae       | Decapoda          | Malacostraca  | Arthropoda    | X    |      |      |      |      |
| Hippolytidae spp.           | Hippolytidae                |               |                 | Hippolytidae       | Decapoda          | Malacostraca  | Arthropoda    |      |      | X    |      |      |
| Holothuroidea               | Holothuroidea               |               |                 |                    |                   | Holothuroidea | Echinodermata | X    | X    |      |      |      |
| Hutchinsoniella macracantha | Hutchinsoniella macracantha | macracantha   | Hutchinsoniella | Hutchinsoniellidae | Brachypoda        | Cephalocarida | Arthropoda    | X    | X    | X    | X    | X    |
| Hyas araneus                | Hyas araneus                | araneus       | Hyas            | Oregoniidae        | Decapoda          | Malacostraca  | Arthropoda    |      | X    | X    |      |      |
| Hyas coarctatus             | Hyas coarctatus             | coarctatus    | Hyas            | Oregoniidae        | Decapoda          | Malacostraca  | Arthropoda    |      |      | X    |      |      |
| Hydrachnida                 | Hydrachna                   |               | Hydrachna       | Hydrachnidae       | Trombidiformes    | Arachnida     | Arthropoda    |      |      |      |      | X    |
| Hydractinia echinata        | Hydractinia echinata        | echinata      | Hydractinia     | Hydractiniidae     | Filifera          | Hydrozoa      | Cnidaria      |      |      |      |      | X    |
| Hydrobia salsa              | Hydrobia                    |               | Hydrobia        | Hydrobiidae        | Neotaenioglossa   | Gastropoda    | Mollusca      | X    | X    |      |      |      |
| Hydrobia sp.                | Hydrobia                    |               | Hydrobia        | Hydrobiidae        | Neotaenioglossa   | Gastropoda    | Mollusca      |      | X    |      |      | X    |
| Hydrobia totteni            | Hydrobia totteni            | totteni       | Hydrobia        | Hydrobiidae        | Neotaenioglossa   | Gastropoda    | Mollusca      | X    | X    |      |      |      |
| Hydrobia truncata           | Hydrobia truncata           | truncata      | Hydrobia        | Hydrobiidae        | Neotaenioglossa   | Gastropoda    | Mollusca      |      |      | X    |      |      |
| Hydrobiidae spp.            | Hydrobiidae                 |               |                 | Hydrobiidae        | Neotaenioglossa   | Gastropoda    | Mollusca      |      |      | X    |      |      |
| Hydroides dianthus          | Hydroides dianthus          | dianthus      | Hydroides       | Serpulidae         | Canalipalpata     | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Hypereteone spp.            | Eteone                      |               | Eteone          | Phyllococidae      | Aciculata         | Polychaeta    | Annelida      | X    |      |      |      |      |
| Ianiropsis sp. 1            | Ianiropsis                  |               | Ianiropsis      | Janiridae          | Isopoda           | Malacostraca  | Arthropoda    |      |      | X    |      | X    |
| Idotea phosphorea           | Idotea phosphorea           | phosphorea    | Idotea          | Idoteidae          | Isopoda           | Malacostraca  | Arthropoda    |      | X    |      | X    |      |
| Ilyanassa obsoleta          | Nassarius obsoletus         | obsoletus     | Nassarius       | Nassariidae        | Neogastropoda     | Gastropoda    | Mollusca      | X    |      | X    | X    | X    |
| Ilyanassa obsoletus         | Nassarius obsoletus         | obsoletus     | Nassarius       | Nassariidae        | Neogastropoda     | Gastropoda    | Mollusca      |      | X    |      |      |      |
| Ilyanassa trivittata        | Nassarius trivittatus       | trivittatus   | Nassarius       | Nassariidae        | Neogastropoda     | Gastropoda    | Mollusca      |      |      | X    | X    | X    |
| Ischyrocerus anguipes       | Ischyrocerus anguipes       | anguipes      | Ischyrocerus    | Ischyroceridae     | Amphipoda         | Malacostraca  | Arthropoda    |      | X    |      |      | X    |
| Jaera marina                | Jaera marina                | marina        | Jaera           | Janiridae          | Isopoda           | Malacostraca  | Arthropoda    |      |      |      |      |      |
| Jassa marmorata             | Jassa marmorata             | marmorata     | Jassa           | Ischyroceridae     | Amphipoda         | Malacostraca  | Arthropoda    | X    | X    | X    |      | X    |
| Kurtziella cerina           | Kurtziella cerina           | cerina        | Kurtziella      | Conidae            | Neogastropoda     | Gastropoda    | Mollusca      | X    | X    | X    | X    | X    |
| Lacuna vincta               | Lacuna vincta               | vincta        | Lacuna          | Littorinidae       | Neotaenioglossa   | Gastropoda    | Mollusca      |      |      | X    | X    | X    |
| Laevicardium mortoni        | Laevicardium mortoni        | mortoni       | Laevicardium    | Cardidae           | Veneroida         | Bivalvia      | Mollusca      |      | X    | X    |      | X    |
| Lagisca extenuata           | Lagisca extenuata           | extenuata     | Lagisca         | Polynoidae         | Aciculata         | Polychaeta    | Annelida      |      | X    |      |      |      |
| Lamprops quadruplicata      | Lamprops quadruplicata      | quadruplicata | Lamprops        | Lampropidae        | Cumacea           | Malacostraca  | Arthropoda    |      |      |      |      | X    |
| Leitoscoloplos acutus       | Scoloplos acutus            | acutus        | Scoloplos       | Orbiniidae         |                   | Polychaeta    | Annelida      |      |      | X    | X    | X    |
| Leitoscoloplos fragilis     | Leitoscoloplos fragilis     | fragilis      | Leitoscoloplos  | Orbiniidae         |                   | Polychaeta    | Annelida      |      | X    |      | X    | X    |

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| NBH Name                   | ITIS Best Name             | Species      | Genus          | Family          | Order             | Class        | Phylum     | 1993 | 1995 | 1999 | 2004 | 2009 |
|----------------------------|----------------------------|--------------|----------------|-----------------|-------------------|--------------|------------|------|------|------|------|------|
| Leitoscoloplos robustus    | Scoloplos robustus         | robustus     | Scoloplos      | Orbiniidae      |                   | Polychaeta   | Annelida   | X    | X    | X    | X    |      |
| Leitoscoloplos sp.         | Leitoscoloplos             |              | Leitoscoloplos | Orbiniidae      |                   | Polychaeta   | Annelida   |      | X    |      | X    | X    |
| Leitoscoloplos spp.        | Leitoscoloplos             |              | Leitoscoloplos | Orbiniidae      |                   | Polychaeta   | Annelida   | X    |      |      |      |      |
| Lembos smithi              | Lembos smithi              | smithi       | Lembos         | Aoridae         | Amphipoda         | Malacostraca | Arthropoda | X    | X    | X    | X    | X    |
| Lepidonotus squamatus      | Lepidonotus squamatus      | squamatus    | Lepidonotus    | Polynoidae      | Aciculata         | Polychaeta   | Annelida   | X    | X    |      | X    | X    |
| Lepidonotus sublevis       | Lepidonotus sublevis       | sublevis     | Lepidonotus    | Polynoidae      | Aciculata         | Polychaeta   | Annelida   |      |      | X    | X    | X    |
| Leptinogaster major        | Leptinogaster major        | major        | Leptinogaster  | Lichomolgidae   | Poecilostomatoida | Maxillopoda  | Arthropoda |      |      |      |      | X    |
| Leptocheirus pinguis       | Leptocheirus pinguis       | pinguis      | Leptocheirus   | Aoridae         | Amphipoda         | Malacostraca | Arthropoda | X    |      |      | X    | X    |
| Leptocheirus plumulosus    | Leptocheirus plumulosus    | plumulosus   | Leptocheirus   | Aoridae         | Amphipoda         | Malacostraca | Arthropoda |      | X    |      |      |      |
| Leptochelia dubia          | Leptochelia dubia          | dubia        | Leptochelia    | Leptocheliidae  | Tanaidacea        | Malacostraca | Arthropoda |      | X    | X    | X    | X    |
| Leptochelia sp.            | Leptochelia                |              | Leptochelia    | Leptocheliidae  | Tanaidacea        | Malacostraca | Arthropoda |      | X    |      |      |      |
| Leucon americanus          | Leucon americanus          | americanus   | Leucon         | Leuconidae      | Cumacea           | Malacostraca | Arthropoda | X    | X    | X    | X    | X    |
| Levinsenia gracilis        | Levinsenia gracilis        | gracilis     | Levinsenia     | Paraonidae      |                   | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Libinia dubia              | Libinia dubia              | dubia        | Libinia        | Pisidae         | Decapoda          | Malacostraca | Arthropoda |      |      | X    | X    |      |
| Libinia emarginata         | Libinia emarginata         | emarginata   | Libinia        | Pisidae         | Decapoda          | Malacostraca | Arthropoda |      | X    |      |      |      |
| Limulus polyphemus         | Limulus polyphemus         | polyphemus   | Limulus        | Limulidae       | Xiphosura         | Merostomata  | Arthropoda |      | X    |      |      |      |
| Lineus ruber               | Lineus ruber               | ruber        | Lineus         | Lineidae        | Heteronemertea    | Anopla       | Nemertea   |      |      |      |      | X    |
| Lissodendoryx carolinensis | Lissodendoryx carolinensis | carolinensis | Lissodendoryx  | Myxillidae      | Poecilosclerida   | Demospongiae | Porifera   |      |      |      |      | X    |
| Listriella barnardi        | Listriella barnardi        | barnardi     | Listriella     | Lijeborgiidae   | Amphipoda         | Malacostraca | Arthropoda | X    | X    | X    | X    | X    |
| Littorina littorea         | Littorina littorea         | littorea     | Littorina      | Littorinidae    | Neotaenioglossa   | Gastropoda   | Mollusca   |      | X    |      | X    | X    |
| Littorina saxatilis        | Littorina saxatilis        | saxatilis    | Littorina      | Littorinidae    | Neotaenioglossa   | Gastropoda   | Mollusca   |      | X    |      |      |      |
| Lovenella gracilis         | Lovenella gracilis         | gracilis     | Lovenella      | Lovenellidae    | Hydrozoa          | Hydrozoa     | Cnidaria   |      |      |      |      | X    |
| Luconacia incerta          | Luconacia incerta          | incerta      | Luconacia      | Paianbidae      | Amphipoda         | Malacostraca | Arthropoda |      | X    | X    | X    | X    |
| Lumbrineridae              | Lumbrineridae              |              |                | Lumbrineridae   | Aciculata         | Polychaeta   | Annelida   | X    | X    |      |      | X    |
| Lumbrineridae spp.         | Lumbrineridae              |              |                | Lumbrineridae   | Aciculata         | Polychaeta   | Annelida   |      |      | X    |      |      |
| Lunatia triseriata         | Euspira triseriata         | triseriata   | Euspira        | Naticidae       | Neotaenioglossa   | Gastropoda   | Mollusca   |      |      |      |      | X    |
| Lyonsia hyalina            | Lyonsia hyalina            | hyalina      | Lyonsia        | Lyonsiidae      | Pholadomyoidea    | Bivalvia     | Mollusca   | X    | X    | X    | X    | X    |
| Lysianopsis alba           | Lysianopsis alba           | alba         | Lysianopsis    | Lysianassidae   | Amphipoda         | Malacostraca | Arthropoda | X    | X    | X    | X    | X    |
| Macoma balthica            | Macoma balthica            | balthica     | Macoma         | Tellinidae      | Veneroidea        | Bivalvia     | Mollusca   | X    | X    |      |      |      |
| Macoma sp.                 | Macoma                     |              | Macoma         | Tellinidae      | Veneroidea        | Bivalvia     | Mollusca   | X    | X    |      |      |      |
| Macoma tenta               | Macoma tenta               | tenta        | Macoma         | Tellinidae      | Veneroidea        | Bivalvia     | Mollusca   | X    | X    | X    | X    | X    |
| Macrochaeta sp. 1          | Macrochaeta                |              | Macrochaeta    | Acrociroidae    | Canalipalpata     | Polychaeta   | Annelida   |      |      | X    |      |      |
| Magelona sp.               | Magelona                   |              | Magelona       | Magelonidae     | Canalipalpata     | Polychaeta   | Annelida   |      | X    |      |      |      |
| Maldane sarsi              | Maldane sarsi              | sarsi        | Maldane        | Maldanidae      |                   | Polychaeta   | Annelida   |      |      |      | X    | X    |
| Maldanidae                 | Maldanidae                 |              |                | Maldanidae      |                   | Polychaeta   | Annelida   | X    | X    |      |      | X    |
| Maldanidae spp.            | Maldanidae                 |              |                | Maldanidae      |                   | Polychaeta   | Annelida   |      |      | X    |      |      |
| Marenzelleria sp.          | Marenzelleria              |              | Marenzelleria  | Spionidae       | Canalipalpata     | Polychaeta   | Annelida   |      | X    |      |      |      |
| Marenzelleria viridis      | Marenzelleria viridis      | viridis      | Marenzelleria  | Spionidae       | Canalipalpata     | Polychaeta   | Annelida   | X    | X    |      | X    | X    |
| Margarites helicinus       | Margarites helicinus       | helicinus    | Margarites     | Trochidae       | Archaeogastropoda | Gastropoda   | Mollusca   |      |      |      | X    |      |
| Margarites sp.             | Margarites                 |              | Margarites     | Trochidae       | Archaeogastropoda | Gastropoda   | Mollusca   | X    |      |      | X    | X    |
| Marphysa sanguinea         | Marphysa sanguinea         | sanguinea    | Marphysa       | Eunicidae       | Aciculata         | Polychaeta   | Annelida   |      |      |      | X    | X    |
| Mediomastus ambiseta       | Mediomastus ambiseta       | ambiseta     | Mediomastus    | Capitellidae    |                   | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Melanella conoidea         | Melanella conoidea         | conoidea     | Melanella      | Eulimidae       | Neotaenioglossa   | Gastropoda   | Mollusca   |      |      | X    |      | X    |
| Melanella oleacea          | Melanella                  |              | Melanella      | Eulimidae       | Neotaenioglossa   | Gastropoda   | Mollusca   |      |      |      |      | X    |
| Melanella sarsi            | Melanella sarsi            | sarsi        | Melanella      | Eulimidae       | Neotaenioglossa   | Gastropoda   | Mollusca   |      |      |      |      | X    |
| Melinna cristata           | Melinna cristata           | cristata     | Melinna        | Ampharetidae    | Canalipalpata     | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Melita nitida              | Melita nitida              | nitida       | Melita         | Melitidae       | Amphipoda         | Malacostraca | Arthropoda |      |      | X    | X    | X    |
| Membranipora tenuis        | Membranipora tenuis        | tenuis       | Membranipora   | Membraniporidae | Cheilostomata     | Gymnolaemata | Ectoprocta |      |      |      | X    |      |
| Membraniporidae            | Membraniporidae            |              |                | Membraniporidae | Cheilostomata     | Gymnolaemata | Ectoprocta |      |      |      | X    |      |
| Mercenaria mercenaria      | Mercenaria mercenaria      | mercenaria   | Mercenaria     | Veneridae       | Veneroidea        | Bivalvia     | Mollusca   | X    | X    | X    | X    | X    |
| Microciona prolifera       | Microciona prolifera       | prolifera    | Microciona     | Clathriidae     | Poecilosclerida   | Demospongiae | Porifera   |      |      |      | X    | X    |
| Microdeutopus anomalus     | Microdeutopus anomalus     | anomalus     | Microdeutopus  | Aoridae         | Amphipoda         | Malacostraca | Arthropoda | X    |      | X    | X    | X    |
| Microdeutopus gryllotalpa  | Microdeutopus gryllotalpa  | gryllotalpa  | Microdeutopus  | Aoridae         | Amphipoda         | Malacostraca | Arthropoda | X    | X    | X    | X    | X    |
| Microphthalmus aberrans    | Microphthalmus aberrans    | aberrans     | Microphthalmus | Hesoniidae      | Aciculata         | Polychaeta   | Annelida   |      | X    | X    | X    | X    |

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| NBH Name                      | ITIS Best Name             | Species          | Genus          | Family          | Order           | Class        | Phylum     | 1993 | 1995 | 1999 | 2004 | 2009 |
|-------------------------------|----------------------------|------------------|----------------|-----------------|-----------------|--------------|------------|------|------|------|------|------|
| Microphthalmus sczelkowi      | Microphthalmus sczelkowi   | sczelkowi        | Microphthalmus | Hesionidae      | Aciculata       | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Microphthalmus sp.            | Microphthalmus             |                  | Microphthalmus | Hesionidae      | Aciculata       | Polychaeta   | Annelida   |      | X    |      | X    | X    |
| Microphthalmus sp. a          | Microphthalmus             |                  | Microphthalmus | Hesionidae      | Aciculata       | Polychaeta   | Annelida   | X    | X    |      |      |      |
| Microphthalmus spp.           | Microphthalmus             |                  | Microphthalmus | Hesionidae      | Aciculata       | Polychaeta   | Annelida   | X    |      |      |      |      |
| Microporella ciliata          | Microporella ciliata       | ciliata          | Microporella   | Microporellidae | Cheilostomata   | Gymnolaemata | Ectoprocta |      |      |      | X    | X    |
| Microprotopus raneyi          | Microprotopus raneyi       | raneyi           | Microprotopus  | Isaeidae        | Amphipoda       | Malacostraca | Arthropoda |      |      | X    | X    | X    |
| Micrura sp.                   | Micrura                    |                  | Micrura        | Lineidae        | Heteronemertea  | Anopla       | Nemertea   |      |      |      |      | X    |
| Micrura spp.                  | Micrura                    |                  | Micrura        | Lineidae        | Heteronemertea  | Anopla       | Nemertea   |      |      | X    |      |      |
| Minuspio cirrifera            | Minuspio cirrifera         | cirrifera        | Minuspio       | Spionidae       | Canalipalpata   | Polychaeta   | Annelida   | X    | X    |      |      |      |
| Mitrella lunata               | Mitrella lunata            | lunata           | Mitrella       | Columbellidae   | Neogastropoda   | Gastropoda   | Mollusca   | X    | X    | X    | X    | X    |
| Molgula manhattensis          | Molgula manhattensis       | manhattensis     | Molgula        | Molgulidae      | Pleurogona      | Ascidiacea   | Chordata   |      |      |      | X    | X    |
| Molgula sp.                   | Molgula                    |                  | Molgula        | Molgulidae      | Pleurogona      | Ascidiacea   | Chordata   |      | X    |      |      | X    |
| Monocorophium acherusicum     | Monocorophium acherusicum  | acherusicum      | Monocorophium  | Corophiidae     | Amphipoda       | Malacostraca | Arthropoda | X    | X    | X    | X    | X    |
| Monocorophium insidiosum      | Monocorophium insidiosum   | insidiosum       | Monocorophium  | Corophiidae     | Amphipoda       | Malacostraca | Arthropoda |      | X    |      |      | X    |
| Monocorophium tuberculatum    | Monocorophium tuberculatum | tuberculatum     | Monocorophium  | Corophiidae     | Amphipoda       | Malacostraca | Arthropoda |      | X    |      | X    |      |
| Monoculodes edwardsi          | Monoculodes edwardsi       | edwardsi         | Monoculodes    | Oedicerotidae   | Amphipoda       | Malacostraca | Arthropoda |      | X    |      |      |      |
| Montacuta percompressa        | Montacuta percompressa     | percompressa     | Montacuta      | Lasaeidae       | Veneroida       | Bivalvia     | Mollusca   |      |      | X    |      |      |
| Monticellina baptisteae       | Tharyx                     |                  | Tharyx         | Cirratulidae    | Canalipalpata   | Polychaeta   | Annelida   |      |      | X    |      | X    |
| Monticellina dorsobranchialis | Tharyx dorsobranchialis    | dorsobranchialis | Tharyx         | Cirratulidae    | Canalipalpata   | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Mulinia lateralis             | Mulinia lateralis          | lateralis        | Mulinia        | Mactridae       | Veneroida       | Bivalvia     | Mollusca   | X    | X    | X    | X    | X    |
| Mya arenaria                  | Mya arenaria               | arenaria         | Mya            | Myidae          | Myoida          | Bivalvia     | Mollusca   | X    | X    | X    | X    | X    |
| Mysella planulata             | Mysella planulata          | planulata        | Mysella        | Lasaeidae       | Veneroida       | Bivalvia     | Mollusca   | X    | X    | X    |      |      |
| Mysidacea spp.                | Lophogastrida              |                  |                |                 | Lophogastrida   | Malacostraca | Arthropoda |      |      | X    |      |      |
| Mytilidae                     | Mytilidae                  |                  |                | Mytilidae       | Mytiloidea      | Bivalvia     | Mollusca   | X    | X    |      |      |      |
| Mytilidae spp.                | Mytilidae                  |                  |                | Mytilidae       | Mytiloidea      | Bivalvia     | Mollusca   |      |      | X    |      |      |
| Mytilus edulis                | Mytilus edulis             | edulis           | Mytilus        | Mytilidae       | Mytiloidea      | Bivalvia     | Mollusca   | X    |      | X    | X    | X    |
| Nassarius trivittatus         | Nassarius trivittatus      | trivittatus      | Nassarius      | Nassariidae     | Neogastropoda   | Gastropoda   | Mollusca   | X    | X    |      |      |      |
| Natica pusilla                | Natica pusilla             | pusilla          | Natica         | Naticidae       | Neotaenioglossa | Gastropoda   | Mollusca   | X    | X    |      |      |      |
| Neanthes acuminata            | Neanthes acuminata         | acuminata        | Neanthes       | Nereididae      | Aciculata       | Polychaeta   | Annelida   | X    | X    |      |      |      |
| Neanthes arenaceodentata      | Neanthes arenaceodentata   | arenaceodentata  | Neanthes       | Nereididae      | Aciculata       | Polychaeta   | Annelida   |      |      |      | X    | X    |
| Neanthes succinea             | Neanthes succinea          | succinea         | Neanthes       | Nereididae      | Aciculata       | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Neanthes virens               | Neanthes virens            | virens           | Neanthes       | Nereididae      | Aciculata       | Polychaeta   | Annelida   |      |      |      | X    | X    |
| Nematoda                      | Nematoda                   |                  |                |                 |                 |              | Nemata     |      |      |      |      | X    |
| Nemertea spp.                 | Nemertea                   |                  |                |                 |                 |              | Nemertea   | X    |      | X    |      |      |
| Nemertinea                    | Nemertea                   |                  |                |                 |                 |              | Nemertea   |      | X    |      |      |      |
| Neomysis americana            | Neomysis americana         | americana        | Neomysis       | Mysidae         | Mysida          | Malacostraca | Arthropoda |      | X    | X    |      | X    |
| Nephtyidae                    | Nephtyidae                 |                  |                | Nephtyidae      | Aciculata       | Polychaeta   | Annelida   | X    | X    |      |      |      |
| Nephtys cornuta               | Nephtys cornuta            | cornuta          | Nephtys        | Nephtyidae      | Aciculata       | Polychaeta   | Annelida   |      |      | X    |      |      |
| Nephtys incisa                | Nephtys incisa             | incisa           | Nephtys        | Nephtyidae      | Aciculata       | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Nephtys picta                 | Nephtys picta              | picta            | Nephtys        | Nephtyidae      | Aciculata       | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Nephtys spp.                  | Nephtys                    |                  | Nephtys        | Nephtyidae      | Aciculata       | Polychaeta   | Annelida   | X    |      |      |      |      |
| Nereididae                    | Nereididae                 |                  |                | Nereididae      | Aciculata       | Polychaeta   | Annelida   | X    | X    |      | X    | X    |
| Nereididae spp.               | Nereididae                 |                  |                | Nereididae      | Aciculata       | Polychaeta   | Annelida   |      |      | X    |      |      |
| Nereis arenaceodonta          | Nereis arenaceodonta       | arenaceodonta    | Nereis         | Nereididae      | Aciculata       | Polychaeta   | Annelida   |      |      | X    |      |      |
| Nereis grayi                  | Nereis grayi               | grayi            | Nereis         | Nereididae      | Aciculata       | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Nereis spp.                   | Nereis                     |                  | Nereis         | Nereididae      | Aciculata       | Polychaeta   | Annelida   |      |      | X    |      |      |
| Neverita duplicata            | Neverita duplicata         | duplicata        | Neverita       | Naticidae       | Neotaenioglossa | Gastropoda   | Mollusca   |      |      |      | X    |      |
| Nicolea zostericola           | Nicolea zostericola        | zostericola      | Nicolea        | Terebellidae    | Canalipalpata   | Polychaeta   | Annelida   |      |      |      | X    | X    |
| Ninoe nigripes                | Ninoe nigripes             | nigripes         | Ninoe          | Lumbrineridae   | Aciculata       | Polychaeta   | Annelida   | X    | X    | X    | X    | X    |
| Notocirrus spiniferus         | Notocirrus spiniferus      | spiniferus       | Notocirrus     | Oeonidae        | Aciculata       | Polychaeta   | Annelida   | X    | X    | X    |      |      |
| Notodelphyidae                | Notodelphyidae             |                  |                | Notodelphyidae  | Cyclopoida      | Maxillopoda  | Arthropoda |      | X    |      |      |      |
| Notomastus latericeus         | Notomastus latericeus      | latericeus       | Notomastus     | Capitellidae    |                 | Polychaeta   | Annelida   |      | X    | X    | X    | X    |
| Nucula annulata               | Nucula annulata            | annulata         | Nucula         | Nuculidae       | Nuculoidea      | Bivalvia     | Mollusca   |      |      | X    | X    | X    |
| Nucula delphinodonta          | Nucula delphinodonta       | delphinodonta    | Nucula         | Nuculidae       | Nuculoidea      | Bivalvia     | Mollusca   | X    | X    | X    |      |      |

**Woods Hole Group**

| NBH Name                     | ITIS Best Name               | Species      | Genus           | Family          | Order          | Class        | Phylum        | 1993 | 1995 | 1999 | 2004 | 2009 |
|------------------------------|------------------------------|--------------|-----------------|-----------------|----------------|--------------|---------------|------|------|------|------|------|
| Nucula proxima               | Nucula proxima               | proxima      | Nucula          | Nuculidae       | Nuculoida      | Bivalvia     | Mollusca      | X    | X    | X    | X    | X    |
| Nucula sp.                   | Nucula                       |              | Nucula          | Nuculidae       | Nuculoida      | Bivalvia     | Mollusca      |      | X    |      |      |      |
| Nucula spp.                  | Nucula                       |              | Nucula          | Nuculidae       | Nuculoida      | Bivalvia     | Mollusca      | X    |      | X    |      |      |
| Nuculana sp.                 | Nuculana                     |              | Nuculana        | Nuculanidae     | Nuculoida      | Bivalvia     | Mollusca      |      | X    |      |      |      |
| Nudibranchia                 | Nudibranchia                 |              |                 |                 | Nudibranchia   | Gastropoda   | Mollusca      |      |      |      |      | X    |
| Nudibranchia spp.            | Nudibranchia                 |              |                 |                 | Nudibranchia   | Gastropoda   | Mollusca      |      |      | X    |      |      |
| Obelia bidentata             | Obelia bidentata             | bidentata    | Obelia          | Campanulariidae | Hydroida       | Hydrozoa     | Cnidaria      |      |      |      | X    | X    |
| Obelia dichotoma             | Obelia dichotoma             | dichotoma    | Obelia          | Campanulariidae | Hydroida       | Hydrozoa     | Cnidaria      |      |      |      |      | X    |
| Odontosyllis fulgurans       | Odontosyllis fulgurans       | fulgurans    | Odontosyllis    | Syllidae        | Aciculata      | Polychaeta   | Annelida      | X    | X    | X    | X    | X    |
| Odostomia bisuturalis        | Odostomia bisuturalis        | bisuturalis  | Boonea          | Pyramidellidae  | Heterostropha  | Gastropoda   | Mollusca      |      | X    |      | X    |      |
| Odostomia dealbata           | Odostomia dealbata           | dealbata     | Odostomia       | Pyramidellidae  | Heterostropha  | Gastropoda   | Mollusca      | X    | X    |      |      |      |
| Odostomia eburnea            | Odostomia eburnea            | eburnea      | Odostomia       | Pyramidellidae  | Heterostropha  | Gastropoda   | Mollusca      | X    |      | X    | X    | X    |
| Odostomia sp.                | Odostomia                    |              | Odostomia       | Pyramidellidae  | Heterostropha  | Gastropoda   | Mollusca      |      | X    |      |      |      |
| Odostomia spp.               | Odostomia                    |              | Odostomia       | Pyramidellidae  | Heterostropha  | Gastropoda   | Mollusca      | X    |      |      |      |      |
| Odostomia striata            | Odostomia striata            | striata      | Odostomia       | Pyramidellidae  | Heterostropha  | Gastropoda   | Mollusca      |      |      |      |      | X    |
| Oedicerotidae                | Oedicerotidae                |              |                 | Oedicerotidae   | Amphipoda      | Malacostraca | Arthropoda    |      | X    |      |      |      |
| Oenonidae                    | Oenonidae                    |              |                 | Oenonidae       | Aciculata      | Polychaeta   | Annelida      |      |      |      |      | X    |
| Oligochaeta                  | Oligochaeta                  |              |                 |                 |                | Clitellata   | Annelida      | X    | X    |      | X    | X    |
| Oligochaeta spp.             | Oligochaeta                  |              |                 |                 |                | Clitellata   | Annelida      |      |      | X    |      |      |
| Onuphidae                    | Onuphidae                    |              |                 | Onuphidae       | Aciculata      | Polychaeta   | Annelida      |      |      |      | X    |      |
| Onuphidae spp.               | Onuphidae                    |              |                 | Onuphidae       | Aciculata      | Polychaeta   | Annelida      |      |      | X    |      |      |
| Ophiura spp.                 | Ophiura                      |              | Ophiura         | Ophiuridae      | Ophiurida      | Ophiuroidea  | Echinodermata |      |      | X    |      |      |
| Ophiuroidea                  | Ophiuroidea                  |              |                 |                 |                | Ophiuroidea  | Echinodermata | X    | X    |      | X    | X    |
| Ophiuroidea spp.             | Ophiuroidea                  |              |                 |                 |                | Ophiuroidea  | Echinodermata |      |      | X    |      |      |
| Orbinia swani                | Orbinia swani                | swani        | Orbinia         | Orbiniidae      |                | Polychaeta   | Annelida      |      | X    |      |      |      |
| Ostracoda                    | Ostracoda                    |              |                 |                 |                | Ostracoda    | Arthropoda    | X    | X    |      |      | X    |
| Ovalipes ocellatus           | Ovalipes ocellatus           | ocellatus    | Ovalipes        | Portunidae      | Decapoda       | Malacostraca | Arthropoda    | X    |      |      |      |      |
| Owenia fusiformis            | Owenia fusiformis            | fusiformis   | Owenia          | Oweniidae       | Canalipalpata  | Polychaeta   | Annelida      |      | X    | X    | X    |      |
| Oweniidae                    | Oweniidae                    |              |                 | Oweniidae       | Canalipalpata  | Polychaeta   | Annelida      |      |      |      |      | X    |
| Oxyurostylis smithi          | Oxyurostylis smithi          | smithi       | Oxyurostylis    | Diastylidae     | Cumacea        | Malacostraca | Arthropoda    | X    | X    | X    | X    | X    |
| Pagurus annulipes            | Pagurus annulipes            | annulipes    | Pagurus         | Paguridae       | Decapoda       | Malacostraca | Arthropoda    |      |      | X    | X    | X    |
| Pagurus longicarpus          | Pagurus longicarpus          | longicarpus  | Pagurus         | Paguridae       | Decapoda       | Malacostraca | Arthropoda    | X    | X    | X    | X    | X    |
| Pagurus pollicaris           | Pagurus pollicaris           | pollicaris   | Pagurus         | Paguridae       | Decapoda       | Malacostraca | Arthropoda    |      |      |      | X    |      |
| Pagurus sp.                  | Pagurus                      |              | Pagurus         | Paguridae       | Decapoda       | Malacostraca | Arthropoda    |      | X    |      |      |      |
| Pagurus spp.                 | Pagurus                      |              | Pagurus         | Paguridae       | Decapoda       | Malacostraca | Arthropoda    |      |      | X    |      |      |
| Palaemonetes pugio           | Palaemonetes pugio           | pugio        | Palaemonetes    | Palaemonidae    | Decapoda       | Malacostraca | Arthropoda    | X    |      |      |      | X    |
| Palaemonetes vulgaris        | Palaemonetes vulgaris        | vulgaris     | Palaemonetes    | Palaemonidae    | Decapoda       | Malacostraca | Arthropoda    |      | X    | X    | X    | X    |
| Pandora glacialis            | Pandora glacialis            | glacialis    | Pandora         | Pandoridae      | Pholadomyoidea | Bivalvia     | Mollusca      |      |      |      |      | X    |
| Pandora gouldiana            | Pandora gouldiana            | gouldiana    | Pandora         | Pandoridae      | Pholadomyoidea | Bivalvia     | Mollusca      |      |      |      | X    |      |
| Pandora inflata              | Pandora inflata              | inflata      | Pandora         | Pandoridae      | Pholadomyoidea | Bivalvia     | Mollusca      |      |      |      |      | X    |
| Pandora sp.                  | Pandora                      |              | Pandora         | Pandoridae      | Pholadomyoidea | Bivalvia     | Mollusca      |      | X    |      | X    |      |
| Panopeus herbstii            | Panopeus herbstii            | herbstii     | Panopeus        | Panopeidae      | Decapoda       | Malacostraca | Arthropoda    |      |      | X    |      |      |
| Paracaprella tenuis          | Paracaprella tenuis          | tenuis       | Paracaprella    | Pariambidae     | Amphipoda      | Malacostraca | Arthropoda    | X    | X    | X    | X    | X    |
| Paradoneis lyra              | Paradoneis lyra              | lyra         | Paradoneis      | Paraonidae      |                | Polychaeta   | Annelida      |      |      | X    |      |      |
| Parametopella sp.            | Parametopella                |              | Parametopella   | Stenothoidae    | Amphipoda      | Malacostraca | Arthropoda    | X    | X    |      |      |      |
| Paranaitis speciosa          | Paranaitis speciosa          | speciosa     | Paranaitis      | Phyllococidae   | Aciculata      | Polychaeta   | Annelida      | X    | X    | X    |      | X    |
| Paraninoe brevipes           | Lumbrineris brevipes         | brevipes     | Lumbrineris     | Lumbrineridae   | Aciculata      | Polychaeta   | Annelida      |      |      | X    |      |      |
| Paraonidae                   | Paraonidae                   |              |                 | Paraonidae      |                | Polychaeta   | Annelida      |      | X    |      |      | X    |
| Paraonis fulgens             | Paraonis fulgens             | fulgens      | Paraonis        | Paraonidae      |                | Polychaeta   | Annelida      | X    | X    | X    |      |      |
| Parapionosyllis longicirrata | Parapionosyllis longicirrata | longicirrata | Parapionosyllis | Syllidae        | Aciculata      | Polychaeta   | Annelida      | X    | X    | X    | X    | X    |
| Parasmittina nitida          | Parasmittina nitida          | nitida       | Parasmittina    | Mucronellidae   | Cheilostomata  | Gymnolaemata | Ectoprocta    |      |      |      | X    |      |
| Parougia caeca               | Parougia caeca               | caeca        | Parougia        | Dorvilleidae    | Aciculata      | Polychaeta   | Annelida      | X    |      | X    | X    | X    |
| Pectinaria gouldi            | Pectinaria gouldi            | gouldi       | Pectinaria      | Pectinariidae   | Canalipalpata  | Polychaeta   | Annelida      | X    | X    | X    | X    | X    |
| Pectinaria spp.              | Pectinaria                   |              | Pectinaria      | Pectinariidae   | Canalipalpata  | Polychaeta   | Annelida      | X    |      |      |      |      |

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| NBH Name                       | ITIS Best Name          | Species       | Genus         | Family          | Order           | Class         | Phylum        | 1993 | 1995 | 1999 | 2004 | 2009 |
|--------------------------------|-------------------------|---------------|---------------|-----------------|-----------------|---------------|---------------|------|------|------|------|------|
| Pectinariidae                  | Pectinariidae           |               |               | Pectinariidae   | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      |      |      |
| Pedicellina cernua             | Pedicellina cernua      | cernua        | Pedicellina   | Pedicellinidae  | Pedicellinida   |               | Entoprocta    |      |      |      | X    |      |
| Pentamera calcigera            | Pentamera calcigera     | calcigera     | Pentamera     | Phyllophoridae  | Dendrochirotida | Holothuroidea | Echinodermata |      |      |      |      | X    |
| Perigonimus jonesi             | Perigonimus jonesi      | jonesi        | Perigonimus   | Bougainvillidae | Hydroida        | Hydrozoa      | Cnidaria      |      |      |      | X    |      |
| Periploma leanum               | Periploma leanum        | leanum        | Periploma     | Periplomatidae  | Pholadomyoidea  | Bivalvia      | Mollusca      |      |      |      |      | X    |
| Petricola pholadiformis        | Petricola pholadiformis | pholadiformis | Petricola     | Petricolidae    | Veneroidea      | Bivalvia      | Mollusca      | X    | X    | X    | X    | X    |
| Phascalion strombi             | Phascalion strombi      | strombi       | Phascalion    | Golfingidae     |                 |               | Sipuncula     |      |      | X    | X    |      |
| Phascalopsis gouldii           | Phascalopsis gouldii    | gouldii       | Phascalopsis  | Sipunculidae    |                 |               | Sipuncula     |      |      | X    |      |      |
| Pherusa affinis                | Pherusa affinis         | affinis       | Pherusa       | Flabelligeridae | Canalipalpata   | Polychaeta    | Annelida      |      | X    | X    |      | X    |
| Pholoe minuta                  | Pholoe minuta           | minuta        | Pholoe        | Pholoidae       | Aciculata       | Polychaeta    | Annelida      | X    | X    |      | X    | X    |
| Phoronis architecta            | Phoronis architecta     | architecta    | Phoronis      | Phoronidae      |                 |               | Phoronida     | X    |      |      |      |      |
| Phoxocephalus holbolli         | Phoxocephalus holbolli  | holbolli      | Phoxocephalus | Phoxocephalidae | Amphipoda       | Malacostraca  | Arthropoda    | X    | X    | X    | X    |      |
| Phyllodoce arenae              | Phyllodoce arenae       | arenae        | Phyllodoce    | Phyllococidae   | Aciculata       | Polychaeta    | Annelida      | X    |      | X    | X    | X    |
| Phyllococidae                  | Phyllococidae           |               |               | Phyllococidae   | Aciculata       | Polychaeta    | Annelida      | X    | X    |      |      |      |
| Phyllococidae spp.             | Phyllococidae           |               |               | Phyllococidae   | Aciculata       | Polychaeta    | Annelida      |      |      | X    |      |      |
| Pilargidae                     | Pilargidae              |               |               | Pilargidae      | Aciculata       | Polychaeta    | Annelida      |      |      |      |      | X    |
| Pinnixa chaetoptera            | Pinnixa chaetoptera     | chaetoptera   | Pinnixa       | Pinnotheridae   | Decapoda        | Malacostraca  | Arthropoda    |      | X    | X    |      | X    |
| Pinnixa sayana                 | Pinnixa sayana          | sayana        | Pinnixa       | Pinnotheridae   | Decapoda        | Malacostraca  | Arthropoda    | X    | X    | X    | X    | X    |
| Pinnixa sp.                    | Pinnixa                 |               | Pinnixa       | Pinnotheridae   | Decapoda        | Malacostraca  | Arthropoda    |      | X    |      |      |      |
| Pinnixa spp.                   | Pinnixa                 |               | Pinnixa       | Pinnotheridae   | Decapoda        | Malacostraca  | Arthropoda    | X    |      | X    |      |      |
| Pinnotheridae spp.             | Pinnotheridae           |               |               | Pinnotheridae   | Decapoda        | Malacostraca  | Arthropoda    |      |      | X    |      |      |
| Pionosyllis sp.                | Pionosyllis             |               | Pionosyllis   | Syllidae        | Aciculata       | Polychaeta    | Annelida      |      |      |      |      | X    |
| Pisione remota                 | Pisione remota          | remota        | Pisione       | Pisionidae      | Aciculata       | Polychaeta    | Annelida      |      |      | X    |      | X    |
| Pista cristata                 | Pista cristata          | cristata      | Pista         | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      | X    |      | X    |      | X    |
| Pista maculata                 | Pista maculata          | maculata      | Pista         | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      |      | X    | X    |      |      |
| Pista palmata                  | Pista palmata           | palmata       | Pista         | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      |      | X    | X    | X    | X    |
| Pista spp.                     | Pista                   |               | Pista         | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    |      |      |
| Pitar morrhuanus               | Pitar morrhuanus        | morrhuanus    | Pitar         | Veneridae       | Veneroidea      | Bivalvia      | Mollusca      |      | X    |      |      |      |
| Pitar morrhuanus               | Pitar morrhuanus        | morrhuanus    | Pitar         | Veneridae       | Veneroidea      | Bivalvia      | Mollusca      | X    |      | X    | X    | X    |
| Platynereis dumerilii          | Platynereis dumerilii   | dumerilii     | Platynereis   | Nereididae      | Aciculata       | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Podarke obscura                | Podarke obscura         | obscura       | Podarke       | Hesionidae      | Aciculata       | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Podocoryne carnea              | Podocoryne carnea       | carnea        | Podocoryne    | Hydractiniidae  | Filifera        | Hydrozoa      | Cnidaria      |      |      |      | X    |      |
| Polinices duplicatus           | Polinices duplicatus    | duplicatus    | Polinices     | Naticidae       | Neotaenioglossa | Gastropoda    | Mollusca      |      | X    | X    |      |      |
| Polinicinae                    | Naticidae               |               |               | Naticidae       | Neotaenioglossa | Gastropoda    | Mollusca      |      |      |      | X    |      |
| Polycarpa fibrosa              | Polycarpa fibrosa       | fibrosa       | Polycarpa     | Styelidae       | Pleurogona      | Ascidiacea    | Chordata      |      | X    |      |      |      |
| Polycirrus eximius             | Polycirrus eximius      | eximius       | Polycirrus    | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Polycirrus medusa              | Polycirrus medusa       | medusa        | Polycirrus    | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      |      |      |
| Polycirrus phosphoreus         | Polycirrus phosphoreus  | phosphoreus   | Polycirrus    | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      | X    | X    |      |      |      |
| Polycirrus sp.                 | Polycirrus              |               | Polycirrus    | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      | X    | X    |
| Polycirrus spp.                | Polycirrus              |               | Polycirrus    | Terebellidae    | Canalipalpata   | Polychaeta    | Annelida      | X    |      | X    |      |      |
| Polydora cornuta               | Polydora cornuta        | cornuta       | Polydora      | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Polydora neocaeca              | Polydora                |               | Polydora      | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    |      |      |
| Polydora sp.                   | Polydora                |               | Polydora      | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      | X    | X    |
| Polydora spp.                  | Polydora                |               | Polydora      | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      | X    |      |      |      |      |
| Polydora websteri              | Polydora websteri       | websteri      | Polydora      | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Polygordius sp.                | Polygordius             |               | Polygordius   | Polygordiidae   | Canalipalpata   | Polychaeta    | Annelida      |      |      |      |      | X    |
| Polygordius sp. a              | Polygordius             |               | Polygordius   | Polygordiidae   | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    |      |      |
| Polyonyx gibbesi               | Polyonyx gibbesi        | gibbesi       | Polyonyx      | Porcellanidae   | Decapoda        | Malacostraca  | Arthropoda    | X    | X    | X    |      | X    |
| Pontogeneia inermis            | Pontogeneia inermis     | inermis       | Pontogeneia   | Eusiriidae      | Amphipoda       | Malacostraca  | Arthropoda    |      |      |      | X    |      |
| Porcellanidae spp.             | Porcellanidae           |               |               | Porcellanidae   | Decapoda        | Malacostraca  | Arthropoda    |      |      | X    |      |      |
| Potamilla reniformis           | Potamilla reniformis    | reniformis    | Potamilla     | Sabellidae      | Canalipalpata   | Polychaeta    | Annelida      |      |      |      |      | X    |
| Pougia caeca                   | Pougia caeca            | caeca         |               |                 |                 |               |               |      | X    |      |      |      |
| Priapulus caudatus             | Priapulus caudatus      | caudatus      | Priapulus     | Priapulidae     |                 |               | Priapula      |      |      | X    |      |      |
| Prionospio (minuspio) perkinsi | Prionospio perkinsi     | perkinsi      | Prionospio    | Spionidae       | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    | X    | X    |

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| NBH Name                   | ITIS Best Name            | Species        | Genus           | Family           | Order           | Class         | Phylum        | 1993 | 1995 | 1999 | 2004 | 2009 |
|----------------------------|---------------------------|----------------|-----------------|------------------|-----------------|---------------|---------------|------|------|------|------|------|
| Prionospio heterobranchia  | Prionospio heterobranchia | heterobranchia | Prionospio      | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Prionospio sp.             | Prionospio                |                | Prionospio      | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      | X    |      |
| Prionospio steenstrupi     | Prionospio steenstrupi    | steenstrupi    | Prionospio      | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      | X    | X    |
| Proboloides holmesi        | Proboloides holmesi       | holmesi        | Proboloides     | Stenothoidae     | Amphipoda       | Malacostraca  | Arthropoda    |      |      |      | X    |      |
| Procephalothrix spiralis   | Procephalothrix spiralis  | spiralis       | Procephalothrix | Cephalothricidae | Paleonemertea   | Anopla        | Nemertea      |      |      |      |      | X    |
| Proceraea cornuta          | Autolytus cornutus        | cornutus       | Autolytus       | Syllidae         | Aciculata       | Polychaeta    | Annelida      |      |      |      | X    |      |
| Propebela turricula        | Propebela turricula       | turricula      | Propebela       | Conidae          | Neogastropoda   | Gastropoda    | Mollusca      |      |      | X    |      |      |
| Prosuberites sp.           | Prosuberites              |                | Prosuberites    | Suberitidae      | Hadromerida     | Demospongiae  | Porifera      |      |      |      | X    |      |
| Protodorvillea gaspeensis  | Protodorvillea gaspeensis | gaspeensis     | Protodorvillea  | Dorvilleidae     | Aciculata       | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Pseudopotamilla reniformis | Potamilla reniformis      | reniformis     | Potamilla       | Sabellidae       | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      |      |      |
| Ptilanthura tenuis         | Ptilanthura tenuis        | tenuis         | Ptilanthura     | Anthuridae       | Isopoda         | Malacostraca  | Arthropoda    |      |      | X    | X    | X    |
| Ptilanthura tricarina      | Ptilanthura tricarina     | tricarina      | Ptilanthura     | Anthuridae       | Isopoda         | Malacostraca  | Arthropoda    |      | X    |      |      |      |
| Pygospio elegans           | Pygospio elegans          | elegans        | Pygospio        | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      | X    | X    |      | X    | X    |
| Pythinella cuneata         | Pythinella cuneata        | cuneata        | Pythinella      | Lasaeidae        | Veneroida       | Bivalvia      | Mollusca      |      |      | X    |      |      |
| Rhepoxynius epistomus      | Rhepoxynius epistomus     | epistomus      | Rhepoxynius     | Phoxocephalidae  | Amphipoda       | Malacostraca  | Arthropoda    | X    |      |      |      |      |
| Rhepoxynius hudsoni        | Rhepoxynius hudsoni       | hudsoni        | Rhepoxynius     | Phoxocephalidae  | Amphipoda       | Malacostraca  | Arthropoda    |      |      | X    | X    | X    |
| Rhepoxynus epistomus       | Rhepoxynius epistomus     | epistomus      | Rhepoxynius     | Phoxocephalidae  | Amphipoda       | Malacostraca  | Arthropoda    |      | X    |      |      |      |
| Rictaxis punctostriatus    | Rictaxis punctostriatus   | punctostriatus | Rictaxis        | Acteonidae       | Heterostrophida | Gastropoda    | Mollusca      | X    | X    | X    | X    | X    |
| Rudilemboides naglei       | Rudilemboides naglei      | naglei         | Rudilemboides   | Aoridae          | Amphipoda       | Malacostraca  | Arthropoda    |      |      | X    | X    | X    |
| Rudilemboides sp.          | Rudilemboides             |                | Rudilemboides   | Aoridae          | Amphipoda       | Malacostraca  | Arthropoda    | X    | X    |      |      |      |
| Sabaco elongatus           | Asychis elongata          | elongata       | Asychis         | Maldanidae       |                 | Polychaeta    | Annelida      | X    |      |      |      |      |
| Sabella microphthalma      | Demonax microphthalmus    | microphthalmus | Demonax         | Sabellidae       | Canalipalpata   | Polychaeta    | Annelida      | X    | X    |      |      |      |
| Sabellaria vulgaris        | Sabellaria vulgaris       | vulgaris       | Sabellaria      | Sabellariidae    | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Saccoglossus kowalevskii   | Saccoglossus kowalevskii  | kowalevskii    | Saccoglossus    | Harrimaniidae    |                 | Enteropneusta | Hemichordata  |      |      | X    | X    | X    |
| Sacoglossa                 | Sacoglossa                |                |                 |                  | Sacoglossa      | Gastropoda    | Mollusca      |      |      |      |      | X    |
| Scalibregma inflatum       | Scalibregma inflatum      | inflatum       | Scalibregma     | Scalibregmatidae |                 | Polychaeta    | Annelida      | X    | X    |      | X    | X    |
| Schizoporella cornuta      | Schizoporella cornuta     | cornuta        | Schizoporella   | Schizoporellidae | Cheilostomata   | Gymnolaemata  | Ectoprocta    |      |      |      | X    | X    |
| Schizoporella unicornis    | Schizoporella unicornis   | unicornis      | Schizoporella   | Schizoporellidae | Cheilostomata   | Gymnolaemata  | Ectoprocta    |      |      |      | X    | X    |
| Sclerodactyla briareus     | Sclerodactyla briareus    | briareus       | Sclerodactyla   | Cucumariidae     | Dendrochirotida | Holothuroidea | Echinodermata |      |      |      |      | X    |
| Scoelepis bousfieldi       | Scoelepis bousfieldi      | bousfieldi     | Scoelepis       | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    | X    | X    |
| Scoelepis sp.              | Scoelepis                 |                | Scoelepis       | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      | X    | X    |
| Scoelepis spp.             | Scoelepis                 |                | Scoelepis       | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      |      |      | X    |      |      |
| Scoelepis texana           | Scoelepis texana          | texana         | Scoelepis       | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Scoletoma acicularum       | Lumbrineris acicularum    | acicularum     | Lumbrineris     | Lumbrineridae    | Aciculata       | Polychaeta    | Annelida      | X    |      | X    |      |      |
| Scoletoma hebes            | Lumbrineris hebes         | hebes          | Lumbrineris     | Lumbrineridae    | Aciculata       | Polychaeta    | Annelida      |      | X    | X    | X    | X    |
| Scoletoma sp.              | Lumbrineris               |                | Lumbrineris     | Lumbrineridae    | Aciculata       | Polychaeta    | Annelida      |      | X    |      |      |      |
| Scoletoma tenuis           | Lumbrineris tenuis        | tenuis         | Lumbrineris     | Lumbrineridae    | Aciculata       | Polychaeta    | Annelida      | X    | X    | X    |      |      |
| Scoloplos (leodamus) rubra | Scoloplos rubra           | rubra          | Scoloplos       | Orbiniidae       |                 | Polychaeta    | Annelida      |      | X    | X    | X    |      |
| Scoloplos riseri           | Orbinia riseri            | riseri         | Orbinia         | Orbiniidae       |                 | Polychaeta    | Annelida      |      |      |      | X    |      |
| Scoloplos spp.             | Scoloplos                 |                | Scoloplos       | Orbiniidae       |                 | Polychaeta    | Annelida      |      |      | X    |      |      |
| Seila adamsi               | Seila adamsi              | adamsi         | Seila           | Cerithiopsidae   | Neotaenioglossa | Gastropoda    | Mollusca      |      | X    | X    | X    | X    |
| Serpulidae                 | Serpulidae                |                |                 | Serpulidae       | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      |      |      |
| Sertularia cupressina      | Sertularia cupressina     | cupressina     | Sertularia      | Sertulariidae    | Hydrozoa        | Hydrozoa      | Cnidaria      |      |      |      | X    |      |
| Siliqua costata            | Siliqua costata           | costata        | Siliqua         | Pharidae         | Veneroida       | Bivalvia      | Mollusca      | X    | X    |      |      |      |
| Sipuncula                  | Sipuncula                 |                |                 |                  |                 |               | Sipuncula     |      | X    |      |      |      |
| Solemya spp.               | Solemya                   |                | Solemya         | Solemyidae       | Solemyoidea     | Bivalvia      | Mollusca      | X    |      |      |      |      |
| Solemya velum              | Solemya velum             | velum          | Solemya         | Solemyidae       | Solemyoidea     | Bivalvia      | Mollusca      |      | X    | X    | X    | X    |
| Sphaerodoropsis minuta     | Sphaerodoropsis minuta    | minuta         | Sphaerodoropsis | Sphaerodoropidae | Aciculata       | Polychaeta    | Annelida      |      | X    | X    |      | X    |
| Sphaerosyllis erinaceus    | Sphaerosyllis erinaceus   | erinaceus      | Sphaerosyllis   | Syllidae         | Aciculata       | Polychaeta    | Annelida      | X    |      |      |      |      |
| Sphaerosyllis hystrix      | Sphaerosyllis hystrix     | hystrix        | Sphaerosyllis   | Syllidae         | Aciculata       | Polychaeta    | Annelida      | X    |      |      |      |      |
| Sphaerosyllis longicauda   | Sphaerosyllis longicauda  | longicauda     | Sphaerosyllis   | Syllidae         | Aciculata       | Polychaeta    | Annelida      |      | X    | X    | X    | X    |
| Sphaerosyllis taylori      | Sphaerosyllis taylori     | taylori        | Sphaerosyllis   | Syllidae         | Aciculata       | Polychaeta    | Annelida      |      | X    | X    |      | X    |
| Spio setosa                | Spio setosa               | setosa         | Spio            | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      | X    | X    | X    | X    | X    |
| Spio sp.                   | Spio                      |                | Spio            | Spionidae        | Canalipalpata   | Polychaeta    | Annelida      |      | X    |      |      |      |

## Woods Hole Group

| NBH Name                   | ITIS Best Name            | Species      | Genus            | Family           | Order           | Class        | Phylum          | 1993 | 1995 | 1999 | 2004 | 2009 |
|----------------------------|---------------------------|--------------|------------------|------------------|-----------------|--------------|-----------------|------|------|------|------|------|
| Spiochaetopterus oculatus  | Spiochaetopterus oculatus | oculatus     | Spiochaetopterus | Chaetopteridae   | Canalipalpata   | Polychaeta   | Annelida        | X    | X    | X    |      | X    |
| Spionidae                  | Spionidae                 |              |                  | Spionidae        | Canalipalpata   | Polychaeta   | Annelida        | X    | X    |      |      | X    |
| Spionidae spp.             | Spionidae                 |              |                  | Spionidae        | Canalipalpata   | Polychaeta   | Annelida        |      |      | X    |      |      |
| Spiophanes bombyx          | Spiophanes bombyx         | bombyx       | Spiophanes       | Spionidae        | Canalipalpata   | Polychaeta   | Annelida        | X    | X    | X    | X    | X    |
| Spisula solidissima        | Spisula solidissima       | solidissima  | Spisula          | Macridae         | Veneroida       | Bivalvia     | Mollusca        | X    | X    |      |      | X    |
| Spurwinkia salsa           | Spurwinkia salsa          | salsa        | Spurwinkia       | Hydrobiidae      | Neotaenioglossa | Gastropoda   | Mollusca        |      |      | X    | X    | X    |
| Squilla empusa             | Squilla empusa            | empusa       | Squilla          | Squillidae       | Stomatopoda     | Malacostraca | Arthropoda      |      |      |      | X    |      |
| Stenothoe minuta           | Stenothoe minuta          | minuta       | Stenothoe        | Stenothoidae     | Amphipoda       | Malacostraca | Arthropoda      |      | X    | X    | X    |      |
| Stenothoidae spp.          | Stenothoidae              |              |                  | Stenothoidae     | Amphipoda       | Malacostraca | Arthropoda      |      |      | X    |      |      |
| Sthenelais boa             | Sthenelais boa            | boa          | Sthenelais       | Sigalionidae     | Aciculata       | Polychaeta   | Annelida        | X    | X    | X    | X    | X    |
| Streblospio benedicti      | Streblospio benedicti     | benedicti    | Streblospio      | Spionidae        | Canalipalpata   | Polychaeta   | Annelida        | X    | X    | X    | X    | X    |
| Streptosyllis ? varians    | Streptosyllis varians     | varians      | Streptosyllis    | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      |      | X    |      |      |
| Streptosyllis cf. websteri | Streptosyllis websteri    | websteri     | Streptosyllis    | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      |      |      | X    |      |
| Stylochus ellipticus       | Stylochus ellipticus      | ellipticus   | Stylochus        | Stylochidae      | Polycladida     | Turbellaria  | Platyhelminthes |      |      |      |      | X    |
| Syllidae                   | Syllidae                  |              |                  | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      | X    |      | X    | X    |
| Syllidae spp.              | Syllidae                  |              |                  | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      |      | X    |      |      |
| Syllides cf. verilli       | Syllides setosa           | setosa       | Syllides         | Syllidae         | Aciculata       | Polychaeta   | Annelida        | X    | X    | X    | X    | X    |
| Syllides convoluta         | Syllides longocirrata     | longocirrata | Syllides         | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      |      |      |      | X    |
| Syllides japonica          | Syllides japonica         | japonica     | Syllides         | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      |      |      | X    |      |
| Syllis (typosyllis) sp.    | Syllidae                  |              |                  | Syllidae         | Aciculata       | Polychaeta   | Annelida        | X    |      |      |      |      |
| Syllis cornuta             | Syllis cornuta            | cornuta      | Syllis           | Syllidae         | Aciculata       | Polychaeta   | Annelida        | X    | X    |      |      |      |
| Syllis gracilis            | Syllis gracilis           | gracilis     | Syllis           | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      |      |      |      | X    |
| Tagelus divisis            | Tagelus divisis           | divisis      | Tagelus          | Solecurtidae     | Veneroida       | Bivalvia     | Mollusca        |      |      |      |      | X    |
| Tectonatica pusilla        | Tectonatica pusilla       | pusilla      | Tectonatica      | Naticidae        | Neotaenioglossa | Gastropoda   | Mollusca        |      |      | X    | X    | X    |
| Tellina agilis             | Tellina agilis            | agilis       | Tellina          | Tellinidae       | Veneroida       | Bivalvia     | Mollusca        | X    | X    | X    | X    | X    |
| Tellinidae                 | Tellinidae                |              |                  | Tellinidae       | Veneroida       | Bivalvia     | Mollusca        | X    | X    |      | X    | X    |
| Tellinidae spp.            | Tellinidae                |              |                  | Tellinidae       | Veneroida       | Bivalvia     | Mollusca        |      |      | X    |      |      |
| Terebella lapidaria        | Terebella lapidaria       | lapidaria    | Terebella        | Terebellidae     | Canalipalpata   | Polychaeta   | Annelida        |      |      |      |      | X    |
| Terebellidae               | Terebellidae              |              |                  | Terebellidae     | Canalipalpata   | Polychaeta   | Annelida        | X    | X    |      | X    |      |
| Terebellidae spp.          | Terebellidae              |              |                  | Terebellidae     | Canalipalpata   | Polychaeta   | Annelida        |      |      | X    |      |      |
| Tetrastemma candidum       | Tetrastemma candidum      | candidum     | Tetrastemma      | Tetrastemmatidae | Hoplonemertea   | Enopla       | Nemertea        |      |      |      |      | X    |
| Thalassinidea spp.         | Thalassinidea             |              |                  |                  | Decapoda        | Malacostraca | Arthropoda      |      |      | X    |      |      |
| Tharyx acutus              | Tharyx acutus             | acutus       | Tharyx           | Cirratulidae     | Canalipalpata   | Polychaeta   | Annelida        | X    | X    | X    | X    | X    |
| Thyasira gouldi            | Thyasira gouldii          | gouldii      | Thyasira         | Thyasiridae      | Veneroida       | Bivalvia     | Mollusca        |      |      |      | X    |      |
| Thyasira gouldii           | Thyasira gouldii          | gouldii      | Thyasira         | Thyasiridae      | Veneroida       | Bivalvia     | Mollusca        | X    | X    | X    |      | X    |
| Travisia forbesii          | Travisia forbesii         | forbesii     | Travisia         | Ophelidae        |                 | Polychaeta   | Annelida        |      | X    |      |      |      |
| Tubulanus sp.              | Tubulanus                 |              | Tubulanus        | Tubulanidae      | Paleonemertea   | Anopla       | Nemertea        |      |      |      | X    | X    |
| Turbellaria                | Turbellaria               |              |                  |                  |                 | Turbellaria  | Platyhelminthes | X    | X    |      | X    | X    |
| Turbellaria spp.           | Turbellaria               |              |                  |                  |                 | Turbellaria  | Platyhelminthes |      |      | X    |      |      |
| Turbonilla aequalis        | Turbonilla aequalis       | aequalis     | Turbonilla       | Pyramidellidae   | Heterostropha   | Gastropoda   | Mollusca        |      | X    | X    | X    | X    |
| Turbonilla areolata        | Turbonilla interrupta     | interrupta   | Turbonilla       | Pyramidellidae   | Heterostropha   | Gastropoda   | Mollusca        |      |      | X    |      |      |
| Turbonilla elegantula      | Turbonilla elegantula     | elegantula   | Turbonilla       | Pyramidellidae   | Heterostropha   | Gastropoda   | Mollusca        |      |      | X    | X    | X    |
| Turbonilla interrupta      | Turbonilla interrupta     | interrupta   | Turbonilla       | Pyramidellidae   | Heterostropha   | Gastropoda   | Mollusca        | X    | X    |      |      | X    |
| Turbonilla sp.             | Turbonilla                |              | Turbonilla       | Pyramidellidae   | Heterostropha   | Gastropoda   | Mollusca        |      | X    |      | X    | X    |
| Turbonilla spp.            | Turbonilla                |              | Turbonilla       | Pyramidellidae   | Heterostropha   | Gastropoda   | Mollusca        | X    |      | X    |      |      |
| Turbonilla sumneri         | Turbonilla sumneri        | sumneri      | Turbonilla       | Pyramidellidae   | Heterostropha   | Gastropoda   | Mollusca        |      | X    |      |      |      |
| Turritellopsis acicula     | Turritellopsis acicula    | acicula      | Turritellopsis   | Mathildidae      | Heterostropha   | Gastropoda   | Mollusca        |      |      | X    |      |      |
| Typosyllis alternata       | Typosyllis alternata      | alternata    | Typosyllis       | Syllidae         | Aciculata       | Polychaeta   | Annelida        | X    |      | X    | X    | X    |
| Typosyllis regulata        | Typosyllis regulata       | regulata     | Typosyllis       | Syllidae         | Aciculata       | Polychaeta   | Annelida        |      |      | X    |      |      |
| Unciola dissimilis         | Unciola dissimilis        | dissimilis   | Unciola          | Corophiidae      | Amphipoda       | Malacostraca | Arthropoda      |      |      | X    | X    |      |
| Unciola irrorata           | Unciola irrorata          | irrorata     | Unciola          | Corophiidae      | Amphipoda       | Malacostraca | Arthropoda      | X    | X    | X    | X    | X    |
| Unciola serrata            | Unciola serrata           | serrata      | Unciola          | Corophiidae      | Amphipoda       | Malacostraca | Arthropoda      | X    | X    |      | X    |      |
| Unciola spp.               | Unciola                   |              | Unciola          | Corophiidae      | Amphipoda       | Malacostraca | Arthropoda      |      |      | X    |      |      |
| Upogebia affinis           | Upogebia affinis          | affinis      | Upogebia         | Upogebiidae      | Decapoda        | Malacostraca | Arthropoda      | X    | X    | X    | X    | X    |

**Woods Hole Group**

| <b>NBH Name</b>        | <b>ITIS Best Name</b>  | <b>Species</b> | <b>Genus</b> | <b>Family</b> | <b>Order</b>  | <b>Class</b> | <b>Phylum</b> | <b>1993</b> | <b>1995</b> | <b>1999</b> | <b>2004</b> | <b>2009</b> |
|------------------------|------------------------|----------------|--------------|---------------|---------------|--------------|---------------|-------------|-------------|-------------|-------------|-------------|
| Urosalpinx cinerea     | Urosalpinx cinerea     | cinerea        | Urosalpinx   | Muricidae     | Neogastropoda | Gastropoda   | Mollusca      |             |             |             | X           | X           |
| Xanthidae              | Xanthidae              |                |              | Xanthidae     | Decapoda      | Malacostraca | Arthropoda    |             | X           |             |             |             |
| Xanthidae spp.         | Xanthidae              |                |              | Xanthidae     | Decapoda      | Malacostraca | Arthropoda    |             |             | X           |             |             |
| Yoldia limatula        | Yoldia limatula        | limatula       | Yoldia       | Yoldiidae     | Nuculoida     | Bivalvia     | Mollusca      | X           | X           | X           | X           | X           |
| Yoldia sapotilla       | Yoldia sapotilla       | sapotilla      | Yoldia       | Yoldiidae     | Nuculoida     | Bivalvia     | Mollusca      |             |             | X           |             |             |
| Yoldia sp.             | Yoldia                 |                | Yoldia       | Yoldiidae     | Nuculoida     | Bivalvia     | Mollusca      |             | X           |             | X           | X           |
| Yoldia spp.            | Yoldia                 |                | Yoldia       | Yoldiidae     | Nuculoida     | Bivalvia     | Mollusca      | X           |             | X           |             |             |
| Zaops ostreum          | Zaops ostreum          | ostreum        | Zaops        | Pinnotheridae | Decapoda      | Malacostraca | Arthropoda    |             |             | X           |             | X           |
| Zygonemertes virescens | Zygonemertes virescens | virescens      | Zygonemertes | Amphiporidae  | Hoplonemertea | Enopla       | Nemertea      |             |             |             |             | X           |

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