DATA SUMMARY REPORT

Hudson River Project
1998 High Flow Monitoring Program

General Electric Company
Corporate Environmental Programs
Albany, New York

April 1999

O'BRIEN & GERE
ENGINEERS, INC.

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1. Introduction

On behalf of the General Electric Company (General Electric), O'Brien & Gere Engineers, Inc. (O'Brien & Gere) conducted field studies in the upper Hudson River (Figure 1-1) for the 1998 January high flow event sampling. The sampling and analysis methods employed were consistent with procedures presented in the *1997 High Flow Monitoring Program, Upper Hudson River Sampling and Analysis Plan* (HydroQual and O'Brien & Gere 1997). The sampling and analysis plan was submitted to the New York State Department of Environmental Conservation (NYSDEC), The New York State Department of Health (NYSDOH), and the U.S. Environmental Protection Agency (USEPA) for review and comment. The agencies did not provide comments on the sampling and analysis plan.

This data summary report presents the project background, program objectives, sampling and analysis methods, and hydrologic and analytical data generated during the 1998 January high flow event sampling.

1.1. Project background

General Electric conducted extensive investigations from 1996 to 1998 to evaluate potential causes for anomalous PCB loading in the Thompson Island Pool (HydroQual 1997a; HydroQual and O'Brien & Gere 1997; HydroQual and O'Brien & Gere 1996; HydroQual et al. 1997; O'Brien & Gere 1999a,b, 1997a,b,c). PCB loading attributable to diffusive flux based on principles of equilibrium partitioning is insufficient to account for the water column PCB concentrations measured at Thompson Island Dam (HydroQual 1995).

Several hypotheses were evaluated by the 1996 through 1998 sampling programs to investigate potential PCB loading mechanisms in Thompson Island Pool (HydroQual and O'Brien & Gere 1997):

Underestimating PCB loading at Fort Edward HRM 194.2[1] - The mass and concentration of PCBs entering the Thompson Island Pool are greater than the mass and concentration measured at the Fort Edward monitoring station due to pulsed loadings from the Bakers Falls area or due to PCB transport in the bed-load sediment. The Post-Construction Remnant Deposit Monitoring Program (PCRDMP) water sampling conducted weekly in the upper Hudson River (O'Brien & Gere 1998a) would likely not detect either of these potential PCB sources to the Thompson Island Pool. Pulsed loadings from the Bakers Falls area were evaluated during the 1997 hydro facility monitoring conducted as part of the PCRDMP (O'Brien & Gere 1997a, 1998), the 1997 High Flow and Suspended Solids Program (O'Brien & Gere 1999), and the 1998 High Flow Monitoring Program. PCB transport in bed-load sediment was also evaluated during the 1997 High Flow and Suspended Solids Monitoring Program (O'Brien & Gere 1999)

Another potential means for underestimating the PCB mass transport at the Fort Edward monitoring station would be the movement of dense nonaqueous phase liquid (DNAPL) as part of the bed-load, which would not be detected by the sampling device in the overlying water column. This hypothesis was previously tested and was reported on separately (HydroQual 1997a).

Overestimating PCB loading at Thompson Island Dam (HRM 188.5) - PCB concentrations measured in samples collected from the routine monitoring station at the Thompson Island Dam are greater than the average PCB concentrations in water as it passes over the dam. This hypothesis was evaluated during the 1996-1997 Thompson Island Pool Studies (O'Brien & Gere 1998) and PCRDMP since 1998.

Contributions from ground water flux through sediment - Ground water inflow to the Thompson Island Pool is transporting PCBs from sediment to the water column. Ground water seepage was evaluated during the 1997 Ground Water Seepage Investigation (GeoTrans 1997).

Increased PCB concentrations in surface sediment - PCB concentrations in surface sediment are greater than historic surface sediment data. This

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[1] Hudson River mile (HRM) sample location designations indicate the approximate river mile upstream of the confluence of the Hudson River at the Battery in New York City, HRM 0.0. The north-south orientation of the river provides a convenient location reference.

could occur as a result of release(s) of PCBs from the Hudson Falls Plant site area. Surface sediment PCB concentrations were evaluated during the Upper Hudson River Sediment Coring Program (O'Brien & Gere 1999a).

Other PCB sources - Significant quantities of PCBs are entering the Thompson Island Pool between Rogers Island and the Thompson Island Pool from areas such as dredge spoil sites. Other potential sources were investigated during the 1996-1997 Thompson Island Pool Studies (O'Brien & Gere 1998).

Low flow resuspension - Resuspension of surface sediment contributes a significant quantity of PCBs into the Thompson Island Pool water column. Surface sediment resuspension was investigated as part of the 1997 High Flow and Suspended Solids Monitoring Program (O'Brien & Gere 1999b).

One purpose of the 1998 High Flow Monitoring Program was to evaluate the potential for pulsed loadings of PCBs to enter the river during high flow and pass the Rogers Island monitoring stations at the upstream portion of Thompson Island Pool undetected by the PCRDMP water sampling.

Pulsed loadings from the Bakers Falls area are possible due to the known migration of PCBs as a DNAPL through fractures in bedrock from the General Electric Hudson Falls facility to the Hudson River. PCB DNAPL seeps have been identified in Bakers Falls and the plunge pool located at the base of the falls (Figure 1-1). It is possible that accumulations of PCB DNAPL on the falls and in the plunge pool may be mobilized during periods of elevated flow over the falls and through the plunge pool. It is important to note that the oil seep discovered in the plunge pool (*i.e.*, seep 13) in September 1996 and controlled in October 1996 may have been the major contributor of DNAPL loading to the river. Therefore, the importance of pulsed loading, as measured during this study may have been diminished in magnitude and importance compared to periods prior to October 1996. Other potential sources in the vicinity of Bakers Falls are being investigated (General Electric 1998, 1999).

Under typical flow conditions (approximately 8,000 cfs or less), Bakers Falls is dewatered due to diversion of flow through the Adirondack Hydro Development Corporation (AHDC) hydroelectric facility at Bakers Falls, which began operation in December 1995 (Figure 1-1). Pulsed loadings of PCBs to the river may result during periods of high flow, causing inundation

of the falls and flow through the plunge pool[2]. The changes in flow patterns and increased currents experienced during periods of high flow may mobilize PCB DNAPL. Some of this PCB DNAPL may be transported during the initial increase in river flow. This potential mass of PCB would be mobilized in a short period and unless routine river monitoring occurred at that point, this PCB mass would pass undetected and potentially deposit in the more quiescent sections of the Thompson Island Pool, resulting in increased PCB levels in surface sediment.

During the week of January 5, 1998 a slow moving warm weather storm system resulted in significant rainfall in the upper Hudson River watershed. As a result of the partial melting of the existing snowpack and local rainfall (an estimated 4.6 inches of rain fell at the General Electric Hudson Falls plant site; Dames & Moore 1998) flows in the river increased. At Fort Edward, Hudson River flows increased from a low flow of 3,300 cfs on Tuesday, January 6, 1998 to a peak flow of 35,300 cfs on Saturday, January 10, 1998 before the flow subsided (Figure 1-2). The peak flow was approximately a 15-year reoccurrence event based on data summarized by the U.S. Environmental Protection Agency (USEPA 1991):

Estimated daily flood events

Reoccurrence Period (years)	1931-1989 Flood Flow (cfs)
5	28,000
10	32,000
25	36,900
50	40,300
100	43,600

Source: USEPA 1991

[2] Brief periodic inundation of Bakers Falls during routine maintenance activities performed at the AHDC hydroelectric facility at Bakers Falls may also contribute to PCB loading to Thompson Island Pool which is undetected by the PCRDMP water column sampling. The potential impact of the hydroelectric facility maintenance activities was investigated separately (O'Brien & Gere 1997a).

The high flow event was the highest recorded flow recorded at Fort Edward since the US Geological Survey (USGS) gage was installed in 1977 (Appendix A). Since removal of the Fort Edward dam in 1973, two flood events of similar magnitude occurred. One event occurred in April 1976 (33,400 cfs at Hadley) and the other occurred in May 1983 (35,200 cfs at Fort Edward).

The January 1998 high flow event sampling provided additional data to evaluate PCB loading in the reach of the upper Hudson River between Bakers Falls and Schuylerville. At Fort Edward, peak river flows during the January 1998 event (35,300 cfs) exceeded previous sampling conducted for this purpose (O'Brien & Gere and HydroQual 1997; O'Brien & Gere 1999; HydroQual 1997b). This information will be useful for calibrating the PCB fate and transport model of the Hudson River being developed for General Electric by Quantitative Environmental Associates, LLC (QEA).

1.2. Program objectives

The primary objective of the 1998 High Flow Monitoring Program was to evaluate the potential for pulsed PCB loadings originating near Bakers Falls to pass Rogers Island during high flow events. Such PCB discharges my be undetected by the weekly monitoring program, resulting in underestimation of PCB loading into the Thompson Island Pool during high flow events. The 1998 program included two additional objectives:

- Evaluate fate and composition of PCB loading during a high flow event.
- Evaluate solids loading and characteristics for Thompson Island Pool tributaries.

1.3. Approach

To achieve the above objectives, ten sampling rounds were conducted from January 9 through 12, 1998. Sampling and analytical methods for the sampling events are described in Section 2. The results of these sampling events are presented in Section 3.

2. Methods and materials

The 1998 January high flow event sampling consisted of high flow water column sampling, and limited Thompson Island Pool tributary TSS sampling. The sampling and analysis methods employed were consistent with the *1997 High Flow Monitoring Program, Upper Hudson River, Sampling and Analysis Plan* (HydroQual and O'Brien & Gere 1997). The river was also sampled at approximately 3,300 cfs on January 6, 1998 during weekly PCRDMP sampling, prior to the high flow event.

The sampling and analytical methods for these activities are presented in Sections 2.1 through 2.4. Sample handling, field equipment cleaning, quality assurance/quality control (QA/QC), and health and safety procedures are also presented (Sections 2.5, 2.6, 2.7 and 2.8, respectively). To assist in the evaluation of the data, provisional flow data for the subject section of the Hudson River were obtained from the United States Geological Survey (USGS 1997) Fort Edward monitoring station (Figure 1-2). Peak flow data from 1912 to 1998 for the Hadley gaging station located upstream of Fort Edward are also summarized (Appendix A). Photographs showing various aspects of the field activities are presented in Appendix B.

2.1. Sample locations

For this monitoring event, the sampling primarily focused on obtaining data from the river at the Route 197 bridges at Fort Edward (HRM 194.2), the west dam abutment at Thompson Island Dam (HRM 188.5W), and the Route 29 bridge at Schuylerville (SCH, Figure 1-1, Table 2-1). These stations are sampled weekly for the PCRDMP. In addition, samples were collected less frequently at the background station at the Route 27 bridge in Hudson Falls (HRM 197.0) and the east dam abutment at Thompson Island Dam (HRM 188.5E; Table 2-2). For three rounds of sampling, the Snook Kill and Moses Kill, two tributaries to the Hudson River with confluences in Thompson Island Pool were also sampled (Figure 1-1).

2.2. Sample collection times

Sampling times and corresponding river flows are presented in Table 2-2. Initially, a single sample was collected at HRM 194.2 on the morning of January 9, 1998, when river flow was 32,000 cfs. Field personnel were mobilized later that same day, when river flows exceeding 43,000 cfs were anticipated. Mobilization was based on a forecast of high flow obtained from the Northeast River Forecast Center (NERFC) via the internet site and instantaneous flow monitoring of the USGS gaging station at Fort Edward (USGS 1998).

Nine additional rounds of high flow sampling were conducted January 9 through 12, 1998 (Table 2-2). Round 1 sampling began at the Fort Edward sampling station upon arrival of sampling personnel at the river at approximately 23:00 on January 9, 1998. Subsequent sampling rounds were initiated at the Fort Edward sampling station as flow increased at approximately 1,000 cfs increments based on instantaneous flow monitoring at the Fort Edward gaging station or 2.5-hour sampling intervals, whichever came first. Rounds 1 and 2 were collected near the peak flows on the rising limb of the hydrograph, at 34,000 and 34,800 cfs, respectively. During round 3, the river flow crested at 35,300 cfs (Figure 1-2). Rounds 4 through 9 were collected as river flows dropped from 35,000 cfs to 16,100 cfs. Between Rounds 4 and 5, USGS was observed preparing to sample at the HRM 194.2 bridges. Round 9 was collected as the weekly PCRDMP sampling. Photographs of the river in the reach of the river sampled are presented in Appendix B.

Three rounds included high volume samples that were collected for solids analysis (Table 2-2):

- Round 1, with flows at 34,000 cfs
- Round 3, with flows at 35,300 cfs
- Round 5, with flows at 35,000 cfs.

2.3. Sample collection procedures

Sample collection was generally consistent with procedures used for the PCRDMP. For PCB and total suspended solids (TSS) analyses, depth-composite samples were collected at the bridge sampling stations using Kemmerer samplers and surface grab samples were collected at the Thompson Island Dam sampling stations using stainless steel buckets. Sampling differed from the PCRDMP in three respects:

- Sampling at Thompson Island Dam included the east dam abutment during daylight hours.
- High flow sampling included monitoring during the night. During night sampling, the west channel of HRM 194.2 and the east channel at Thompson Island Dam were excluded due to safety concerns associated with accessing these stations in the dark.
- Separate east and west channel samples were collected from the Route 197 bridges at Fort Edward (HRM 194.2) during the rising limb of the hydrograph. (Sampling for the PCRDMP at the Fort Edward sampling station consists of a single sample composited from aliquots collected at both bridges.)

For PCRDMP sampling on January 6 and 12, 1998, samples were also collected by Dames & Moore in the vicinity of the boat launch at the base of Bakers Falls. Samples collected at the profile station at the Thompson Island dam (TID-PRW2) were included with the January 6 PCRDMP sampling, but were not included with high flow sampling due to unsafe river access conditions.

Details of the procedures and specifications are defined in the Field Sampling Plan (FSP), FSP addendum, and Quality Assurance Project Plan (QAPP) for the PCRDMP (O'Brien & Gere 1992a, 1996a, 1992b).

High volume (5-gallon) surface water grab samples were also collected for solids analysis (Section 2.4) in two, plastic, 2.5-gallon containers by dispensing water from stainless steel sampling buckets. The high volume samples were collected at the tributaries during Rounds 1, 3, and 5 (Table 2-2). The Round 5 high volume sampling also included river stations at HRM 194.2E and W, HRM 188.5E and W, and Schuylerville.

Field logs documenting sampling activities are provided in Appendix C.

2.4. Analytical testing

Whole water (unfiltered) samples were analyzed for PCBs and TSS by Northeast Analytical, Inc. (NEA). Details of the analytical methodologies are provided in the PCRDMP QAPP (O'Brien & Gere 1992b, HydroQual and O'Brien & Gere 1997).

2.4.1. Capillary column analysis of PCBs

Whole water capillary column PCB analyses were performed by NEA using Method NEA-608 CAP, Rev. 3.0 (NEA 1990). The method detection and practical quantitation limits for the method are 11 ng/L and 44 ng/L, respectively. Concentrations of PCBs which are between the method detection limit and practical quantitation limit (from 11 to 44 ng/l) are considered estimates and results are reported with a "P" qualifier (O'Brien & Gere 1998). The homolog and congener distributions may be less reliable at these low levels due to decreased sensitivity of the method for lower chlorinated congeners close to the detection limit (O'Brien & Gere 1998).

Research in 1997 identified coelution biases in the quantification of PCB congener data generated by Method NEA608CAP (HydroQual 1997c). These biases resulted from error in the coeluting mixed peak deconvolution assumptions used for Hudson River samples. Correction factors were developed to adjust the PCB data for these coelution biases (HydroQual 1997c), and have been applied to PCB analytical data collected from the Hudson River (O'Brien & Gere 1997d). The tables presented in this report contain coelution bias adjusted data, whereas the data presented in the laboratory reports (Appendix D) are not adjusted.

2.4.2. Total suspended solids analyses

Analyses for TSS were performed according to USEPA Method 160.2 (USEPA 1983).

2.4.3. High volume sample solids analysis

The 5-gallon grab samples were submitted to NEA for processing and solids analysis. The processing consisted of allowing the samples to settle for three days, followed by removal of the supernatant, and centrifugation to obtain a solids sample. The supernatant was analyzed for TSS (Section 2.4.2); the solids were analyzed for total organic carbon (TOC) and loss on ignition. Analyses for TOC were performed according to USEPA Method 415.2 (USEPA 1983). An aliquot of the solids was provided to the University of

Minnesota Limnological Research Center External Services Organization for laser-based particle size analysis.

2.5. Sample handling

Samples were handled according to procedures presented in the QAPP (O'Brien & Gere 1992b). Samples were assigned a unique sample designation identifying sample location, date and time of sample collection. Upon collection, PCB samples were placed in 1-liter clear glass Boston type bottles and TSS samples were placed in 1-liter plastic bottles. High volume samples were collected in two 2.5 gallon containers. Samples were chilled with ice to approximately 4°C. Following completion of field activities, samples were transported to NEA for analysis. Standard chain of custody procedures were followed, as detailed in the QAPP (O'Brien & Gere 1992b). Copies of field logs documenting field activities are provided in Appendix C. Copies of chains of custody are provided with the analytical data packages (Appendices D, E, and F).

2.6. Field equipment cleaning

For the high flow water column monitoring program, sampling equipment was cleaned at the Syracuse office of O'Brien & Gere prior to initiation of field sampling activities, according to procedures presented in the field sampling plan addendum presented in the *Fort Edward Dam PCB Remnant Containment 1995 Post-Construction Monitoring Program* report (O'Brien & Gere 1996). In addition, sampling equipment was cleaned in the field between sampling rounds. Equipment used for collection of samples for PCB analysis was cleaned in the field using the following three sequential rinse steps:

1. acetone rinse
2. hexane rinse
3. rinse with distilled water, using at least approximately five times the volume of solvent used.

Subsequently, the sampling equipment was rinsed with river water prior to sampling.

2.7. Quality assurance/quality control

Prior to sampling, equipment blanks were collected from each piece of sampling equipment used in this program. Field QA/QC activities were conducted according to procedures presented in the QAPP developed for the PCRDMP (O'Brien & Gere 1992b) and the addendum to the QAPP presented in the *Hudson River Project River Monitoring Test* Sampling and Analysis Plan (O'Brien & Gere 1995). QA/QC field samples for PCB analyses consisted of a matrix spike, a duplicate and equipment blanks. QA/QC field samples for TSS analyses consisted of duplicate analyses. The QA/QC field samples collected and analyzed for PCBs are summarized for the high flow water column sampling (Table 2-3). PCRDMP sampling conducted on January 6 and 12, 1998 along with the high flow water column sampling also included a matrix spike, a blind duplicate and an equipment blank for each round of sampling, as required by that program.

Evaluation of PCB QA/QC consisted of complete validation of PCB data to summarize the acceptability of data quality for the intended uses (Appendix G). A summary of the matrix spike recoveries, duplicate relative percent differences (RPD), and equipment blank results is also provided (Table 2-3).

2.8. Health and safety

Field activities were conducted in accordance with health and safety procedures described in the health and safety plan developed for the PCRDMP (O'Brien & Gere 1992c) and the addendum to the health and safety plan provided in the *Hudson River Project River Monitoring Test* sampling and analysis plan (O'Brien & Gere 1995).

3. Results

3.1. High flow water column sampling

High flow water column sampling results for January 6 through 12, 1998 are presented below:

- Total PCB and TSS results are presented in Table 3-1. PCB analytical data packages are presented in Appendix D. TSS analytical data packages are presented in Appendix E.
- PCB homolog distributions are presented in Table 3-2.
- Tributary and high volume sample data for TSS, TOC, and particle size are presented in Tables 3-3 and 3-4 and Appendix F.

3.2. Quality assurance/quality control

The results of the review of PCB QA/QC data for the water column monitoring conducted during high flow indicated that the data quality was acceptable for the intended uses (Appendix G, Table 2-3).

Potential laboratory contamination with Aroclor 1260 was indicated in samples collected for high flow monitoring by the presence of heptachlorobiphenyls in some of the samples. Typically, heptachlorobiphenyls are not detected in Hudson River samples although they have been detected in the past due to laboratory contamination (Appendix G). Trace detections of heptachlorobiphenyls may be due to the presence of trace amounts of Aroclor 1254 occasionally detected in the river. Alternatively, the presence of heptachlorobiphenyls may be an artifact of Aroclor 1260 contamination of samples by the laboratory.

In October 1997, prior to 1998 high flow sample analysis, laboratory contamination with Aroclor 1260 was detected in wipe samples collected from laboratory equipment. The laboratory reportedly discarded associated laboratory ware and cleaned laboratory surfaces. The laboratory did not report

the detection of Aroclor 1260 associated with samples collected for this program. Due to the uncertainty associated with the possible presence of laboratory contamination of PCB samples collected for the 1998 high flow monitoring event, samples containing detectable levels of heptachlorobiphenyls were qualified as approximate (J1, Tables 3-1, 3-2, and 3-5) consistent with 1997 monitoring programs (Appendix G).

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Table 2-1. *Sample locations and descriptions*

Sampling Location	HRM*	Significance of location	River bed geometry	Sample type
County Route 27 Bridge, Hudson Falls	197.0	Background location, upstream of GE Hudson Falls facility and Bakers Falls.	Water depth typically 4 to 6 feet.	Depth integrated composite sample collected with Kemmerer sampler from center of bridge.
Route 197 Bridges, Fort Edward	194.2	Downstream of remnant deposits.	Water depth typically 6 to 12 feet deep. Water flow in east and west channels approximately 35% and 65% of total flow[1].	Depth integrated composite sample collected with Kemmerer sampler. Aliquots collected from east and west bridges are composited.
Thompson Island Dam, HRM 188.5W	188.5	West channel from west dam abut-ment, approx. 5 ft upstream of TID; routine sampling station with PCRDMP.	Shallow water depth, 3-4 ft deep, at this near-shore sampling station.	Surface grab sample collected from the dam abutment with a stainless steel bucket.
Thompson Island Dam HRM 188.5E	188.5	East channel from east dam abutment, approx. 5 ft upstream of TID' sampled only during dayliight hours for safety reasons.	Shallow water depth, 3-4 ft deep at this nearshore sampling station.	Surface grab sample collected from the dam abutment with a stainless steel bucket.
Schuylerville	181.4	Middle section of river navigation channel at upstream side of Rt. 29 bridge, Schuylerville	Typical total water depth approx. 15-16 ft	Depth-integrated composite sample collected from the Rt.. 29 bridge using a Kemmerer sampler

Notes: * Approximate Hudson River mile; HRM 0.0 is located at the Battery in New York City. Table lists sampling stations from upstream to downstream.

References:

1. O'Brien & Gere Engineers, Inc. 1996. Water Column Monitoring Study Sample and Analysis Plan. Syracuse, New York; O'Brien & Gere Engineers, Inc.

Source: O'Brien & Gere Engineers, Inc

Table 2-2. Sample locations and collection times

Sample location	Round / Date / Flow (cfs)	PCRDMP 01/06 3,300	01/09 32,000	1 1/09-1/10 34,000	2 01/10 34,800	3 01/10 35,300	4 01/10 35,000	5 01/10 35,000	6 01/10 34,700	7 01/11 27,200	8 01/11 22,400	9-PCRDMP 01/12 16,100
PCB and TSS samples												
	HRM 197.0	09:00	--	1/10-01:00	--	--	--	--	--	08:40	--	10:55
	HRM 194.2C	10:00	09:15	--	--	--	--	--	--	09:35	15:45	12:00 (D)
	HRM 194.2E	--	--	1/09-23:30	02:00	04:30	08:15*	10:20*	12:50	--	--	--
	HRM 194.2W	--	--	--	--	--	08:15 (D)*	10:20*	12:50	--	--	--
	HRM 188.5W	11:30	--	1/09-23:50	02:25	04:55	08:55	11:25	13:15	09:55 (D)	16:10	12:20
	HRM 188.5E	--	--	--	--	--	08:35	11:15	13:10	--	--	--
	TID-PRW2	11:55	--	--	--	--	--	--	--	--	--	--
	SCH	12:45	--	1/09-23:55	02:00	04:45	09:00	11:45	13:40 (D)	10:20	16:30	12:40
High Volume samples												
	Snook Kill	--	--	1/10-00:15	--	05:10	--	10:50	--	--	--	--
	Moses Kill	--	--	1/10-00:25	--	05:00	--	11:00	--	--	--	--
	River Stations	--	--	--	--	--	--	X	--	--	--	--

Notes:

Flows = instantaneous readings obtained from the USGS gaging station at Fort Edward, recorded during sampling at Fort Edward.

* = USGS observed preparing to collect samples at Fort Edward station at approximately 09:40.

(D) = duplicate sample collected.

River stations = all river stations sampled for high volume samples, except HRM 197.0. Approximate sampling times for high volume samples (X) are noted above for the stations.

C = Sample collected as 50/50 composite of east and west channel bridge stations, sample collection time indicated for HRM 194.2E

W = Sample collected from west channel bridge (HRM 194.2) or west dam abutment (HRM 188.5).

E = Sample collected from east channel bridge (HRM 194.2) or east dam abutment (HRM 188.5).

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Table 2-3. ***Field sampling PCB quality assurance/quality control***

QA/QC sample type	Purpose	Evaluation procedure	Criteria	1998 high flow results [1] No. of samples	Statistics
Matrix spike	Evaluate accuracy of PCB quantification in the field media.	Duplicate samples are spiked with a known quantity of analyte by the laboratory. The percent recovery is calculated.	Spike recoveries are expected to be in the 70 to 130 recovery range.	5	mean - 98% min - 93% max - 109%
Duplicate	Evaluate the precision of analyses.	For data equal to or greater than five times the method detection limit (MDL), a relative percent difference (RPD) is calculated as: RPD = (C1 - C2) / (C1+C2 / 2); where C1 is the original sample and C2 is the duplicate sample.	The RPD is expected to be less than 35%.	5	mean - 10% max - 17%
		For data less than five times the MDL, the difference is calculated for the original and duplicate samples.	The difference is expected to be less than the value of the MDL (11 ng/l).		
Equipment blank	Evaluate the effectiveness of equipment cleaning procedures.	PCBs should be below the detection limit (11 ng/l). Detection of PCBs in the equipment blank requires evaluation of source and correction of contamination problem.	Detection of PCBs in the equipment blank results in qualification of the associated field samples. Field sample concentrations <5 times the concentration of the equipment blank are qualified with a "U."	9	<11 ng/l, no detections

[1]Data validation results.

Source: O'Brien & Gere Engineers, Inc.

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Table 3-1. Analytical results - Hudson River sampling stations.

			HRM 197.0			HRM 194.2									HRM 188.5						Schuylerville		
						50/50 Composite			East			West			East			West					
Sampling Round	Date	Flow (cfs)	PCBs (ng/l)	TSS (mg/l)	Com	PCBs (ng/l)	TSS (mg/l)	Com	PCBs (ng/l)	TSS (mg/l)	Com	PCBs (ng/l)	TSS (mg/l)	Com	PCBs (ng/l)	TSS (mg/l)	Com	PCBs (ng/l)	TSS (mg/l)	Com	PCBs (ng/l)	TSS (mg/l)	Com
PCRDMP	1/6/98	3,300	<11	1.4	--	<11	1.7	--	--	--	--	--	--	--	--	--	--	21	3.7	P	22	4.0	P
	1/9/98	32,000	--	--	--	71	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1	1/9/98	34,000	<11	28	--	--	--	--	57	32	--	--	--	--	--	--	--	142	37	--	253	76	J1
2	1/10/98	34,800	--	--	--	--	--	--	190	34	J1	--	--	--	--	--	--	161	37	J1	517	72	J1
3	1/10/98	35,300	--	--	--	--	--	--	87	33	J1	--	--	--	--	--	--	158	40	--	225	68	--
4	1/10/98	35,000	--	--	--	--	--	--	72	35	--	54(48)	31(35)	--	210	55	J1	213	41	--	293	62	J1
5	1/10/98	35,000	--	--	--	--	--	--	77	33	J,J1	43	34	P, J	192	50	J	204	38	J,J1	311	50	J,J1
6	1/11/98	34,700	--	--	--	--	--	--	49	34	J	137	33	J, J1	230	47	J,J1	192	37	J	340(286)	51(53)	J, (J1)
7	1/11/98	27,200	<11	15	--	22	17	P	--	--	--	--	--	--	--	--	--	83(80)	20(21)	--	131	27	--
8	1/11/98	22,400	--	--	--	26	13	P	--	--	--	--	--	--	--	--	--	54	15	--	104	21	--
PCRDMP 9	1/12/98	16,100	<11	5.0	--	19(18)	6.3(6.5)	P	--	--	--	--	--	--	--	--	--	32	7.9	P	52	9.5	--

Notes:
(1) Samples analyzed for PCB by capillary column using Method NEA608CAP. Data has been corrected for analytical bias.
(2) HRM = Approximate Hudson River mile; HRM 0.0 is located at the Battery in New York City.
(3) Flows = presented as instantaneous readings obtained from the USGS gaging station at Fort Edward, recorded during sampling at Fort Edward.
(4) Parentheses indicate results of duplicate analyses.
(5) "Com." = comments include clarifications of sampling and analytical methods, and PCB validation qualifiers:
P = Practical quantitation limit (PQL) note for PCB values between 11 and 44 ng/l.
J = PCB sample results approximate due to minor excursions from data validation criteria.
J1= PCB sample results approximate due to potential laboratory contamination of samples with Aroclor 1260.

Source: O'Brien & Gere Engineers, Inc.

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Table 3-2. *High flow monitoring homolog distributions.*

Sampling Round	Date Collected	Location	Comments	Total PCB (ng/l)	Homolog Weight Percent Distributions									
					mono	di	tri	tetra	penta	hexa	hepta	octa	nona	deca
-	-	Aroclor 1242	Standard	4.09E+06	0.0	17.7	48.0	28.2	5.2	1.0	0.0	0.0	0.0	0.0
PCRDMP	1/6/98	HRM 197.0	-	<11	-	-	-	-	-	-	-	-	-	-
		Boat Launch	DM	111	0.0	11.5	48.9	30.3	7.0	2.3	0.0	0.0	0.0	0.0
		HRM 194.2	-	<11	-	-	-	-	-	-	-	-	-	-
		HRM 188.5	P	21	0.0	24.2	37.3	21.1	13.1	4.3	0.0	0.0	0.0	0.0
		TID-PRW2	P	18	0.0	25.1	40.5	21.0	9.6	3.8	0.0	0.0	0.0	0.0
		SCH	P	22	15.6	37.5	19.0	13.1	11.1	3.7	0.0	0.0	0.0	0.0
		TID-PRW2	BD, P	20	0.0	23.7	41.8	19.5	11.6	3.4	0.0	0.0	0.0	0.0
	1/9/98	HRM 194.2	-	71	0.0	2.5	35.9	44.4	14.2	3.0	0.0	0.0	0.0	0.0
1	1/10/98	HRM 197.0	-	<11	-	-	-	-	-	-	-	-	-	-
	1/9/98	HRM 194.2E-1	-	57	0.0	2.9	36.0	46.8	12.3	2.0	0.0	0.0	0.0	0.0
	1/9/98	HRM 188.5W-1	-	142	12.2	29.1	33.9	18.2	5.9	0.8	0.0	0.0	0.0	0.0
	1/9/98	SCH-1	J1	253	8.3	26.5	33.6	20.9	7.4	2.5	0.9	0.0	0.0	0.0
2	1/10/98	HRM 194.2E-2	J1	190	0.0	10.7	41.5	33.9	8.6	3.4	1.8	0.0	0.0	0.0
	1/10/98	HRM 188.5W-2	J1	161	18.4	28.0	27.8	16.8	4.8	2.2	2.1	0.0	0.0	0.0
	1/10/98	SCH-2	J1	517	16.2	35.2	27.5	14.0	5.0	1.6	0.5	0.0	0.0	0.0
3	1/10/98	HRM 194.2E-3	J1	87	0.0	3.3	37.0	40.9	12.0	4.7	2.2	0.0	0.0	0.0
	1/10/98	HRM 188.5W-3	-	158	11.7	29.5	31.7	19.3	7.0	0.9	0.0	0.0	0.0	0.0
	1/10/98	SCH-3	-	225	9.3	30.3	34.3	18.1	7.0	1.0	0.0	0.0	0.0	0.0
4	1/10/98	HRM 194.2W-4	-	54	0.0	7.1	45.7	34.7	10.5	2.0	0.0	0.0	0.0	0.0
	1/10/98	HRM 194.2W-4	BD	48	0.0	4.6	42.6	36.6	14.3	1.9	0.0	0.0	0.0	0.0
	1/10/98	HRM 194.2E-4	-	72	0.0	9.2	42.4	35.3	11.1	2.0	0.0	0.0	0.0	0.0
	1/10/98	HRM 188.5W-4	-	213	13.9	24.6	33.6	19.3	6.2	2.3	0.2	0.0	0.0	0.0
	1/10/98	HRM 188.5E-4	J1	210	12.9	28.0	31.0	18.6	6.2	2.2	1.3	0.0	0.0	0.0
	1/10/98	SCH-4	J1	293	11.7	27.0	32.1	16.3	6.8	2.3	1.0	0.0	0.0	0.0
5	1/10/98	HRM 194.2W-5	P	43	0.0	9.1	37.0	38.9	12.6	2.5	0.0	0.0	0.0	0.0
	1/10/98	HRM 194.2E-5	J,J1	77	0.0	7.3	34.9	39.6	12.7	4.8	0.8	0.0	0.0	0.0
	1/10/98	HRM 188.5W-5	J	204	10.1	24.9	34.6	21.5	6.3	2.5	0.1	0.0	0.0	0.0
	1/10/98	HRM 188.5E-5	J	192	17.8	27.6	30.1	17.6	6.1	0.9	0.0	0.0	0.0	0.0
	1/10/98	SCH-5	J1	311	17.1	30.0	27.6	17.2	5.8	2.0	0.3	0.0	0.0	0.0

311006

Table 3-2. ***High flow monitoring homolog distributions.***

Sampling Round	Date Collected	Location	Comments	Total PCB (ng/l)	Homolog Weight Percent Distributions									
					mono	di	tri	tetra	penta	hexa	hepta	octa	nona	deca
6	1/10/98	HRM 194.2W-6	J,J1	137	0.0	4.1	37.0	43.8	11.5	3.3	0.4	0.0	0.0	0.0
	1/10/98	HRM 194.2E-6	J	49	0.0	9.6	38.5	34.0	14.5	3.4	0.0	0.0	0.0	0.0
	1/10/98	HRM 188.5W-6	J	192	13.8	26.8	31.0	18.9	6.8	2.4	0.3	0.0	0.0	0.0
	1/10/98	HRM 188.5E-6	J,J1	230	14.6	27.3	30.6	18.5	6.0	2.6	0.4	0.0	0.0	0.0
	1/10/98	SCH-6	J	340	17.1	27.0	29.5	17.5	6.3	2.3	0.2	0.0	0.0	0.0
	1/10/98	SCH-6	BD,J1	286	12.8	29.9	31.5	17.5	5.9	2.0	0.5	0.0	0.0	0.0
7	1/11/98	HRM 197.0-7	-	<11	-	-	-	-	-	-	-	-	-	-
	1/11/98	HRM 194.2-7	P	22	0.0	7.9	40.1	31.7	16.9	3.5	0.0	0.0	0.0	0.0
	1/11/98	HRM 188.5W-7	-	83	19.0	28.2	28.0	16.4	6.8	1.7	0.0	0.0	0.0	0.0
	1/11/98	SCH-7	-	131	14.2	25.2	33.1	19.9	6.7	0.9	0.0	0.0	0.0	0.0
8	1/11/98	HRM 194.2-8	P	26	0.0	11.9	40.0	28.3	15.9	4.0	0.0	0.0	0.0	0.0
	1/11/98	HRM 188.5W-8	-	54	10.9	24.3	30.7	24.7	7.8	1.8	0.0	0.0	0.0	0.0
	1/11/98	HRM 188.5W-8	BD	80	13.8	24.7	31.6	20.7	7.8	1.5	0.0	0.0	0.0	0.0
	1/11/98	SCH-8	-	104	12.5	28.6	32.1	17.6	7.8	1.4	0.0	0.0	0.0	0.0
9	1/12/98	Boat Launch	DM	<11	-	-	-	-	-	-	-	-	-	-
	1/12/98	HRM 197.0-9	-	<11	-	-	-	-	-	-	-	-	-	-
	1/12/98	HRM 194.2-9	P	19	0.0	10.4	39.6	29.4	16.2	4.4	0.0	0.0	0.0	0.0
	1/12/98	HRM 188.5W-9	P	32	12.7	25.9	32.3	18.9	8.1	2.1	0.0	0.0	0.0	0.0
	1/12/98	HRM 188.5W-9	BD, P	18	0.0	11.4	37.2	28.9	18.6	3.9	0.0	0.0	0.0	0.0
	1/12/98	SCH-9	-	52	12.0	27.9	32.0	19.1	7.5	1.5	0.0	0.0	0.0	0.0

Notes:

PCBs analyzed by Method NEA608CAP and adjusted for analytical bias.

Comments:

BD = blind duplicate

DM = sample collected by Dames & Moore personnel.

P = Practical quantitation limit indicator for PCB values reported between the method detection limit (11 ng/l) and practical quantitation limit (44 ng/l).

J = data approximate due to excusions from data validation criteria

UJ = detection limit approximate due to excursions from data validation criteria

J1 = Elevated concentrations of heptachorobiphenyls indicate possible laboratory contamination of sample with Aroclor 1260.

Table 3-3. Analytical results - Tributary sampling stations.

Sampling Round	Date	Flow (cfs)	Snook Kill TSS (mg/l)	Snook Kill TOC (mg/kg)	Snook Kill Loss on Ignition	Snook Kill Average Particle Size (u)	Moses Kill TSS (mg/l)	Moses Kill TOC (mg/kg)	Moses Kill Loss on Ignition	Moses Kill Average Particle Size (u)
PCRDMP	1/6/98	3,300	--	--	--	--	--	--	--	--
	1/9/98	32,000	--	--	--	--	--	--	--	--
1	1/9/98	34,000	63	17000		6.90	150	7600		8.08
2	1/10/98	34,800	--	--	--	--	--	--	--	--
3	1/10/98	35,300	50	17000		6.85	160	13000		8.51
4	1/10/98	35,000	--	--	--	--	--	--	--	--
5	1/10/98	35,000	44	24000		6.30	110	7900		7.41
6	1/11/98	34,700	--	--	--	--	--	--	--	--
7	1/11/98	27,200	--	--	--	--	--	--	--	--
8	1/11/98	22,400	--	--	--	--	--	--	--	--
PCRDMP 9	1/12/98	16,100	--	--	--	--	--	--	--	--

Table 3-4. Analytical results - High volume sampling data.

Sampling Round	Date	Flow (cfs)	Analytical Parameters	HRM 194.2 East	HRM 194.2 West	Snook Kill	Moses Kill	HRM 188.5 East	HRM 188.5 West	Schuylerville
5	1/10/98	35,000	TSS (mg/l)	33	34	44	110	50	38	50
			TOC (mg/kg)	52,000	>72,000	24,000	7,900	>56,000	29,000	73,000
			Loss on ignition							
			Avg. particle size (u)	9.38	8.94	6.30	7.41	8.42	9.90	10.12

Table 3-5. *Samples qualified due to possible Aroclor 1260 contamination.*

Date Collected	Sampling Round	Sample Location	Total PCB (ng/l)	Hepta-CB (wt%)	Qualifier
1/9/98	1	Schuylerville	253	0.9	J1
1/10/98	2	HRM 194.2E	190	1.8	J1
		HRM 188.5W	161	2.1	J1
		Schuylerville	517	0.5	J1
1/10/98	3	HRM 194.2E	87	2.2	J1
1/10/98	4	HRM 188.5E	210	1.3	J1
		Schuylerville	293	1.0	J1
1/10/98	5	HRM 194.2E	77	0.8	J1
		Schuylerville	311	0.3	J1
1/10/98	6	HRM 194.2W	137	0.4	J1
		HRM 188.5E	230	0.4	J1
		Schuylerville (dup)	286	0.5	J1

Notes:
Samples analyzed for PCBs by capillary column using Method NEA608CAP. Data has been corrected for coelution bias (O'Brien & Gere, September 1997).
CB = chlorobiphenyl.
HRM = approximate Hudson River mile; HRM 0.0 is located at the Battery in New York City.
W = indicates west channel sample.
E = indicates east channel sample.

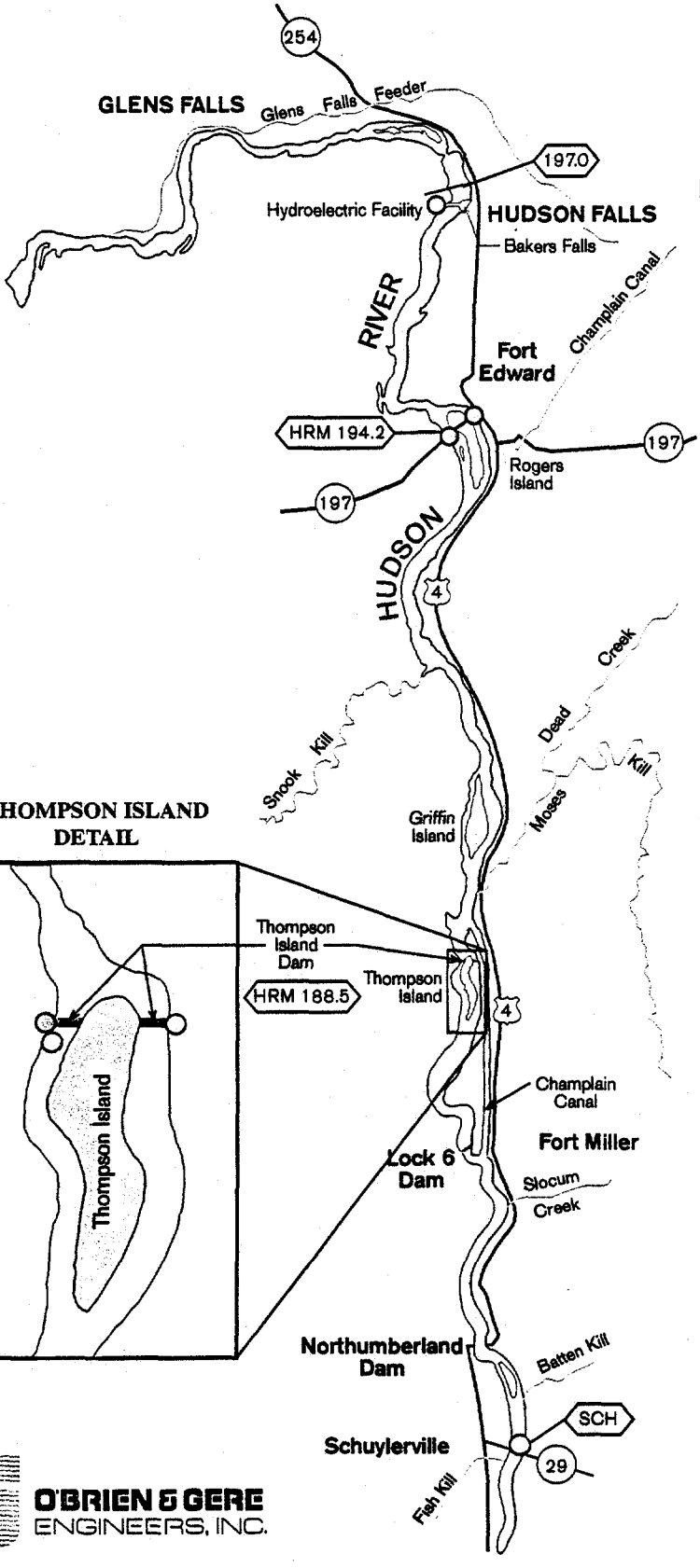
Heptachlorobiphenyls were used as indicator of potential laboratory contamination with traces of Aroclor 1260. Heptachlorobiphenyls are not typically detected in river samples. However, they were detected in 1997 coinciding with the detection of Aroclor 1260 in wipe samples collected in the laboratory. Alternatively, trace levels of heptachlorobiphenyl (<1%) may also be associated with the detection of Arcolor 1254 occassionally detected at trace amounts in river samples. Consistent with the 1997 sampling programs, samples containing heptachlorobiphenyls were qualified as approximate (J1).

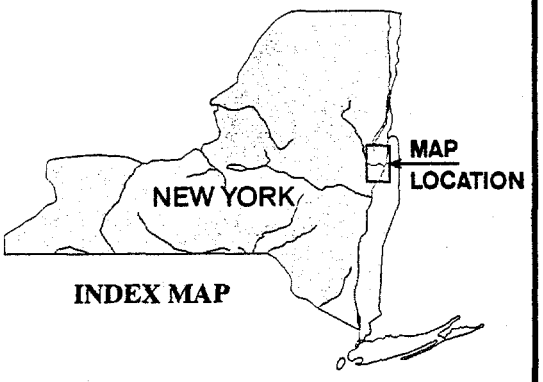
Source: O'Brien & Gere Engineers, Inc.

FIGURES

311011

GENERAL ELECTRIC COMPANY-HUDSON RIVER PROJECT
1998 HIGH FLOW MONITORING EVENT
PCRDMP SAMPLING STATIONS





0 1 2 Miles

Approx. Scale

LEGEND

HRM 194.2 — Approx. River Mile at Routine Water Column Monitoring Stations

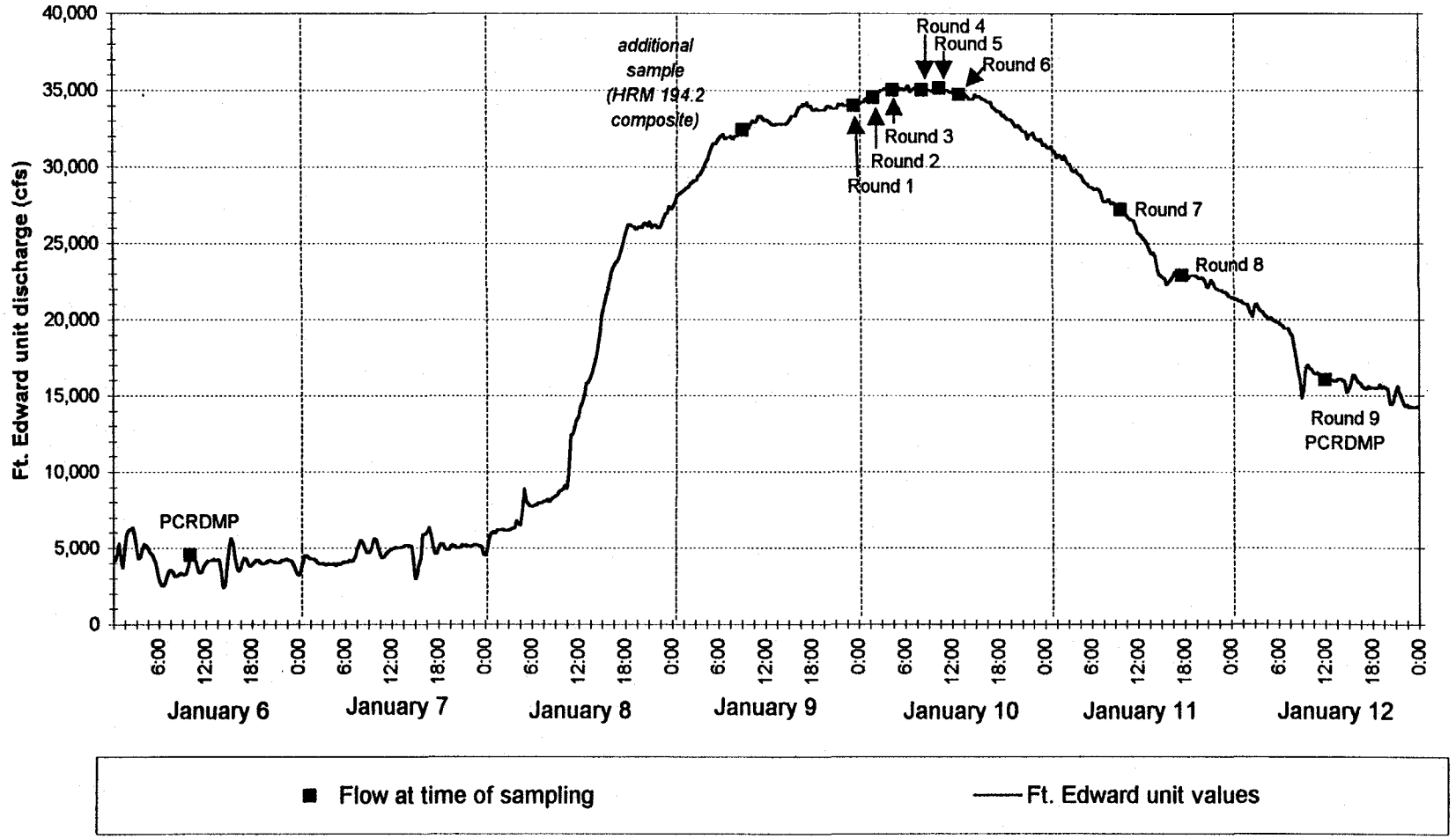
○ Routine Water Column Monitoring Stations

○ Additional Water Column Sampling Stations

O'BRIEN & GERE ENGINEERS, INC.

Figure Adapted From map by HydroQual
REVISED 3/1/99 612.245-001

Figure 1-2. *River flow hydrograph with sampling rounds.*



Note: River discharge data are provisional, real time readings, in 15 minute intervals, obtained through the USGS WEB site. The data have not been reviewed by the USGS.

311013

APPENDICES

APPENDIX A

USGS flow data:
summary of peak flows

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
PEAK FLOW SUMMARY AT FORT EDWARD GAGING STATION (1)
Sorted by Peak Instantaneous Flow
1900 - 1922, 1977 - 1998

Date	PeakDischarge (cfs)	Stage (ft)
03/28/1913 (2)	89,100	18.59
04/13/1922 (2)	58,000	16.30
04/21/1914 (2)	52,200	15.33
04/23/1900 (2)	43,900	--
04/23/1901 (2)	42,800	--
04/16/1909 (2)	41,400	--
06/12/1917 (2)	38,100	12.82
04/01/1905 (2)	37,500	--
03/24/1903 (2)	35,800	--
01/10/1998 (3)	**35,300**	**28.36**
05/03/1983 (3)	35,200	28.34
04/19/1912 (2)	34,800	--
04/04/1918 (2)	34,500	12.16
04/29/1979 (3)	34,000	28.09
03/31/1907 (2)	34,000	--
03/22/1921 (2)	32,800	11.79
04/01/1910 (2)	32,600	--
04/13/1919 (2)	32,000	11.64
04/11/1904 (2)	31,600	--
04/18/1993 (3)	31,500	27.53
04/29/1908 (2)	31,400	--
04/26/1977 (3)	31,000	27.50
04/01/1987 (3)	30,000	27.22
03/17/1902 (2)	29,700	--
04/01/1920 (2)	29,000	11.03
04/20/1906 (2)	28,200	--
05/19/1916 (2)	28,000	10.80
05/22/1990 (3)	27,900	26.76
04/19/1982 (3)	27,800	26.73
04/17/1994 (3)	27,700	(daily mean)
02/22/1981 (3)	27,600	26.68
12/14/1983 (3)	27,600	26.67
04/13/1915 (2)	26,600	10.50
04/24/1996 (3)	26,300	(daily mean)
05/03/1911 (2)	25,700	--
04/10/1980 (3)	23,300	25.68
04/01/1986 (3)	22,400	25.47
05/04/1992 (3)	20,500	25.22
10/18/1977 (3)	20,200	24.96
10/23/1995 (3)	19,700	(daily mean)
12/31/1984 (3)	19,500	24.79
05/13/1989 (3)	19,300	24.96

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
PEAK FLOW SUMMARY AT FORT EDWARD GAGING STATION (1)
Sorted by Peak Instantaneous Flow
1900 - 1922, 1977 - 1998

Date	PeakDischarge (cfs)	Stage (ft)
10/24/1990 (3)	18,900	24.89
05/05/1997 (3)	18,750	24.85
04/05/1988 (3)	12,700	23.53

(1) - data from Spiers Falls gaging station from 1900 - 1922, data from Fort Edward gaging station 1977 - 1998
(2) - Prior to completion of Sacandaga Reservoir in 1930.

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
PEAK FLOW SUMMARY AT HADLEY GAGING STATION
Sorted by Peak Instantaneous Discharge
1913 - 1998

Date	Peak Discharge (cfs)
03/27/1913 (1)	49,000
01/01/1949	42,700
03/18/1936	41,200
04/02/1976 (2)	33,400
04/12/1922 (1)	33,100
06/04/1947	33,000
01/10/1998 (2)	**31,600**
03/28/1953	31,400
05/05/1972	30,100
02/21/1981 (2)	30,000
04/17/1993 (2)	29,700
04/01/1987 (2)	28,500
04/19/1933	28,100
04/28/1979 (2)	27,400
04/18/1982 (2)	26,800
03/16/1990 (2)	26,200
04/25/1926 (1)	26,100
04/17/1994 (2)	26,100
04/22/1958	26,100
04/23/1969	25,800
04/25/1977 (2)	24,800
03/18/1973	24,400
04/29/1925 (1)	23,800
04/09/1928 (1)	23,800
04/06/1952	23,300
09/22/1938	23,200
12/14/1983 (2)	22,900
04/10/1980 (2)	22,700
04/28/1939	22,500
04/05/1960	22,300
05/03/1940	21,900
04/18/1954	21,600
03/31/1951	21,500
05/02/1983 (2)	21,300
03/31/1986 (2)	20,600
09/28/1942	20,400
03/22/1945	20,400
10/22/1995 (2)	20,100
03/28/1948	19,800
04/05/1963	19,800
04/09/1962	19,700
04/16/1955	19,600
04/26/1944	19,600

GENERAL ELECTRIC COMPANY
HUDSON RIVER PROJECT
PEAK FLOW SUMMARY AT HADLEY GAGING STATION
Sorted by Peak Instantaneous Discharge
1913 - 1998

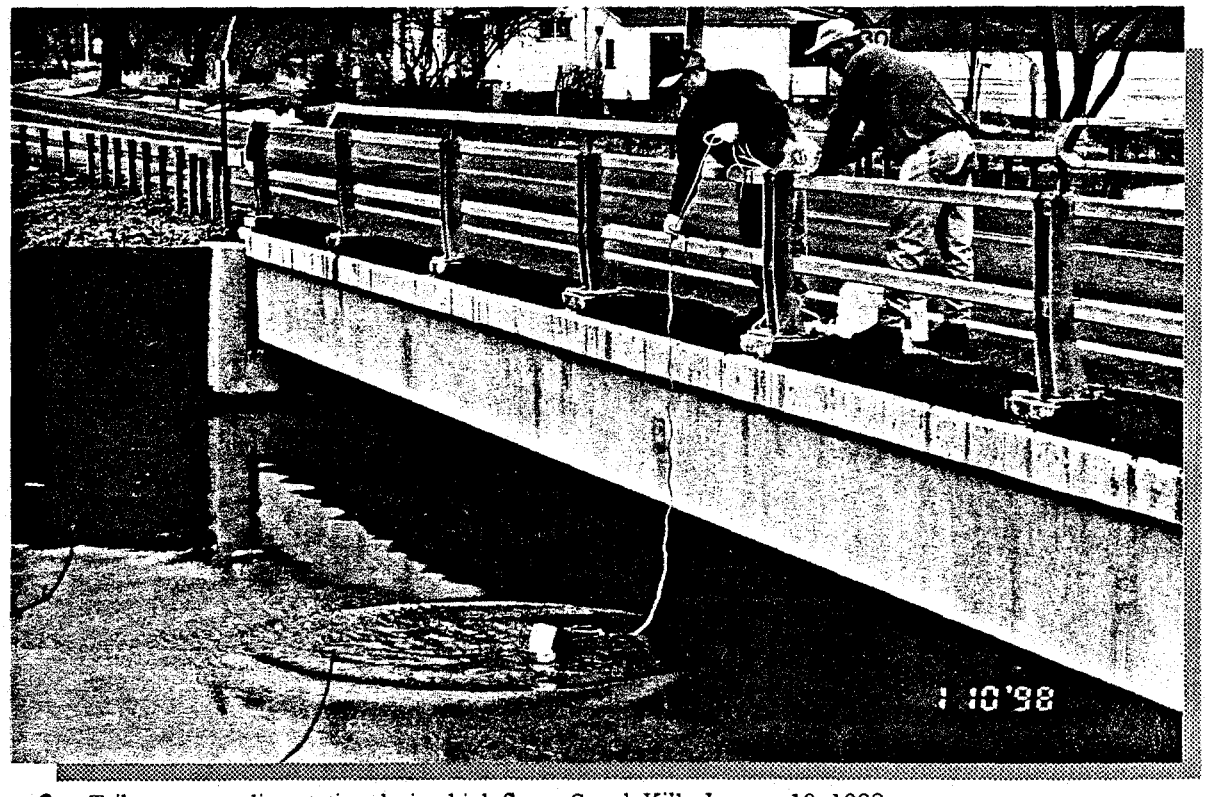
Date	Peak Discharge (cfs)
05/04/1924 (1)	19,500
12/30/1984 (2)	19,200
04/24/1996 (2)	19,000
05/04/1971	18,800
04/21/1950	18,700
04/09/1923 (1)	18,700
04/23/1992 (2)	18,300
04/26/1970	18,300
05/14/1943	18,000
04/16/1941	17,900
04/04/1967	17,600
10/03/1945	17,300
05/01/1956	17,000
04/15/1974 (2)	16,900
04/08/1930	16,700
05/16/1937	16,700
03/26/1929 (1)	16,500
03/24/1968	16,300
10/24/1990 (2)	16,200
04/16/1964	16,200
04/12/1932	15,900
04/20/1959	15,400
04/14/1978 (2)	15,200
04/18/1934	14,700
04/12/1931	14,700
04/26/1975 (2)	14,400
04/24/1961	14,300
05/06/1989 (2)	14,300
04/05/1988 (2)	12,500
07/09/1935	11,300
04/23/1965	11,100
11/18/1926 (1)	11,000
05/21/1966	10,900
05/05/1997 (2)	9,500
05/21/1957	7,900

(1) - Prior to completion of Sacandage Reservoir in 19
(2) - After removal of Fort Edward dam in 1973.

APPENDIX B

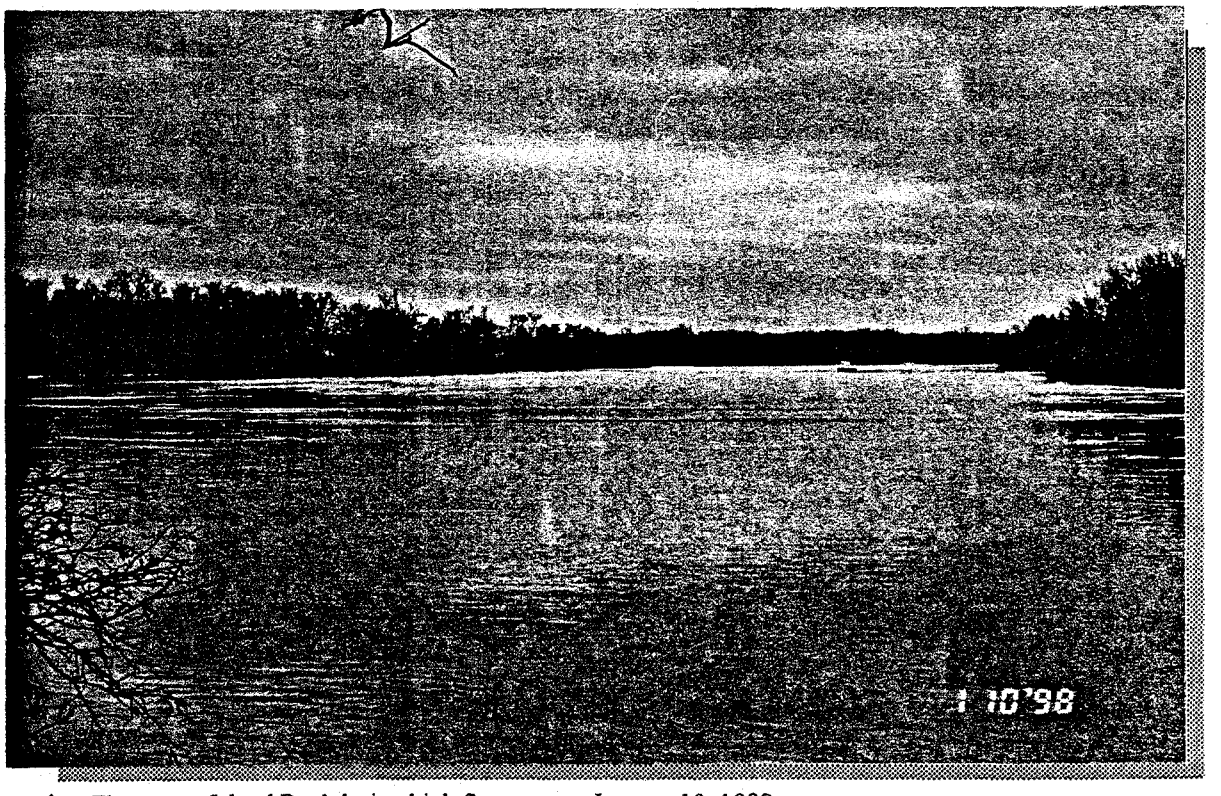
Photographs

1 Baker's Falls during high flow: approximately 32,000 cfs at the Fort Edward USGS gaging station. January 9, 1998.



2 Tributary sampling station during high flow - Snook Kill. January 10, 1998.

3 Thompson Island Pool during high flow event. January 10, 1998.



4 Thompson Island Pool during high flow event. January 10, 1998.

5 West channel at Thompson Island Dam during high flow event. January 10, 1998..

APPENDIX C

Field logs

311025

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: HRM 197.0

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
WATER ~~MOSE~~ HRM 197.0-1	1/10/98	0100	Type: Composite Kemmerer: 95		0-8'	MS		28.19 ~ 34,900 WAP
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					

Additional Notes: Kem 95--EQBC 1/9/98 2332

Weather Data
Description:
Temperature: 40°F
Wind: CALM
Precipitation: NONE

Sampled by: W Ayling

311026

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: HRM 194.2E (east channel)

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
HRM 194.2E-1	1/9/98	2330	Type: Composite Kemmerer: 96A	-	0-9.5	NO	-	28.10 34,000 WMD
HRm 194.2E-2	1/10/98	0200	Type: Composite Kemmerer: 96A	-	0-9.5	NO	-	28.25 34,800 28.33 35,100 @ 0325 JJL
HRm 194.2E-3	1/10/98	0430	Type: Composite Kemmerer: 96A	-	0-9.5	NO	-	28.36 35,300 @ 0413 28.31 @ 527 WMD
HRM 194.2E4	1/10/98	0815	Type: Composite Kemmerer:	-	0-9.5	NO	-	flow has been holding steady WMD
HRM 194.2 E-5	1/10/98	1020	Type: Composite Kemmerer:	-	0-9.5	NO	-	stacked coolers and sampled over topok fence (much better!)
HRM 194.2E-6	1/10/98	1250	Type: Composite Kemmerer:	-	0-9.5	NO	-	same methodology used (USGS is checking flows)
			Type: Composite Kemmerer:					

Additional Notes: Kem 96A-EQBL1 1/9/98 2229
@ 1040 took a 5 gal bulk sample (1/10) HRM 194.2E

Weather Data @ 1250 hrs 1/10/98
Description: mostly cloudy
Temperature: low 40s
Wind: light
Precipitation: none

Sampled by: W. Byleg / J. LaMarche

311027

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: HRM 194.2W (west channel)

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
Hrm 194.2W-4	1/10/98	0815	Type: Composite Kemmerer: 95		0-8'	DUP-1		WAM Particulate in DUP.
Hrm 194.2W-5	1/10/98	1020	Type: Composite Kemmerer: 95		0-8'			WAM INCLUDE HIGH VOL. SAMPLE
Hrm 194.2W-6	1/10/98	1250	Type: Composite Kemmerer:		0-8'			WAM
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
SNOOK KILL-5	1/10/98	1050	Type: Composite Kemmerer: —		GRAB			MB

Additional Notes: USGS preparing to Sample @ 0940 at ENSI Bridge

Weather Data
Description: Overcast
Temperature: 40SF
Wind: Calm
Precipitation: None

Sampled by: WAyling / Mark Bennett

311028

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: HRM 188.5W (west dam abutment)

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
Hrm 188.5W-1	1/9/98	2350	Type: Grab		SURFACE			UNABLE TO COLLECT SAMPLE w/OUT HITTING WALL WAA
Hrm 188.5W-2	1/10/98	0225	Type: Grab					JJL
Hrm 188.5W-3	1/10/98	0455	Type: Grab					WAA
Hrm 188.5W-4	1/10/98	0855	Type: Grab					
Hrm 188.5W-5	1/10/98	1125	Type: Grab					
SNOOK KILL-2	1/10/98	0510	Type: Grab		SURFACE			JJL
SNOOK MOSES KILL-1 WAA	1/10/98	0015	Type: Grab		SURFACE			WAA
Additional Notes:	HRM 188.5W-EB&L 1/9/98 2234							

Weather Data
Description: _____
Temperature: _____
Wind: _____
Precipitation: _____

Sampled by: WAA JJL

311029

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: HRM 188.5W (west dam abutment)

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
HRM 188.5W-6	1/10/97	1315	Type: Grab		Surface			
			Type: Grab					
			Type: Grab					
			Type: Grab					
			Type: Grab					
			Type: Grab					
			Type: Grab					

Additional Notes:

Weather Data
Description: _____
Temperature: _____
Wind: _____
Precipitation: _____

Sampled by: W Ayling

311030

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: HRM 188.5E (east dam abutment)

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
1 2 + 3	–	–	Type: Grab	–	–	–	–	not sampled at night due to dangerous conditions WMD
4 HRM 188.5E	Sat 1/10/98	0835	Type: Grab	–	surface	–	–	little deep over dam – threw sampler well out into flow WMD
5 HRM 188.5E	Sat 1/10/98	1115	Type: Grab	–	surface	–	–	see note ③ WMD
6 HRM 188.5E	Sat 1/10/98	1310	Type: Grab	–	surface	–	–	– WMD
			Type: Grab					
			Type: Grab					
			Type: Grab					

Additional Notes: ③ Filled bulk sample of 5 gal (2 × 2 1/2 gal plastic) 1125 hrs 1/10/98

HRM 188.5E-EBBL1 1/9/98 2227

Weather Data
Description: _____
Temperature: _____
Wind: _____
Precipitation: _____

Sampled by: Wm Dunne/ME Miller

OBrGmeble 796 1300

Note ③

Took the 5 gal bulk sample @ 1200hrs (2 x 2½ gal plastic jugs) from sta SCH

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: SCH (Schuylerville Route 29 Bridge)

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
SCH - 1	FRI 1/9/98	2355	Type: Composite Kemmerer:	-	Note ①	NO	-	① very strong flow - Kemmerer of insufficient weight to sink properly
SCH - 2	SAT 1/10/98	0200	Type: Composite Kemmerer:	-	same	NO	-	lots of ice flowing down
SCH - 3	SAT 1/10/98	0445	Type: Composite Kemmerer:	-	same	NO	-	same weather but colder
SCH - 4	SAT 1/10/98	0900	Type: Composite Kemmerer:	-	Note ②	NO	-	② flow so strong sampler stays on surface! was able to get some depth by lowering rapidly
SCH - 5	SAT 1/10/98	1145	Type: Composite Kemmerer:	-	same	NO	-	tremendous amount of floating debris Note ③
SCH - 6	SAT 1/10/98	1340	Type: Composite Kemmerer:	-	same	Dup #2	-	possibly final sample ?
Kem 96B-E080	1/9/98	2230	Type: Composite Kemmerer: 96B	—	—	—	—	

Additional Notes: Sampled Moses Creek @ 0025 for TSS (1L pla/ice) and 4 bulk sample (2.5 gal pla x 2)
" " " @ 0500 " " " " " " "
" " " @ 1100 " " " " " " "

Weather Data @ 2355 1/9/98
Description: overcast
Temperature: above freezing - high 30s
Wind: light + variable
Precipitation: none but has rained here for last 5 days

Sampled by: WmDonne / MEMiller

Note: Re: Moses Creek
very turbid and heavy with floating debris (mostly plant materials)

311031

311032

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
~~**SAMPLING STATION: HRM 194.2W (west channel)**~~

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
Hrm 197.0-7	1/11/97	0840	Type: Composite Kemmerer: ~~95~~ 96A	—	0-8'	~~BAS~~ comp		
Hrm 194.2-7		0935W 0935E	Type: Composite Kemmerer: ~~95~~ 96A	—	0-8'	MS		26.60 lots of debris in west channel
Hrm 188.5W-7		0955	Type: Composite Kemmerer: —	-	Surface	DUP		
SCH-7		1120	Type: Composite Kemmerer: 96B	—	0-15'	—		Sampled from South side of bridge 26.55
Hrm 194.2-20BL		0905	Type: Composite Kemmerer: 95	—	—	—		
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					

Additional Notes:

Weather Data
Description: Sunny
Temperature:
Wind: CAMM
Precipitation: NONE

Sampled by: W Ayling / W Dunne / M Miller

311033

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

HIGH FLOW MONITORING STUDY - EVENT 1
SAMPLING STATION: HRM 194.2E (east channel)

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
HRM 194.2-8	1/11/98	1545	Type: Composite Kemmerer: 967	0.5°C	0-7'E 0-6'W	—	✓	25.61
HRM 188.5W-8	↓	1610	Type: Composite Kemmerer: —	↓	Surface	—	✓	
BCH-8	↓	1630	Type: Composite Kemmerer: 968	↓	0-12'	—	✓	
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					

Additional Notes:

Weather Data
Description: Clearing / partly overcast
Temperature: —
Wind: Calm
Precipitation: None

Sampled by: KAyling

311034

GENERAL ELECTRIC COMPANY
1998 WATER COLUMN MONITORING STUDY
(Project 612.245)

WEEKLY PCROMP SAMPLING

HIGH FLOW MONITORING STUDY - EVENT 1
~~SAMPLING STATION: HRM 194.2E (east channel)~~

Sampling Round	Date	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
HRM 197.0-9	1/12/98	11:55	Type: Composite Kemmerer: 95	0°C	0-7'	MS	✓	Water flowing over falls
HRM 194.2-9		1200	Type: Composite Kemmerer: 96A	0°C	0-6'	DUP	✓	24.31
HRM 188.5W-9		1220	Type: Composite Kemmerer: —	↓	SURFACE	~~DUP~~ MS/MSD	✓	
~~HRM~~ SCH-9		1240	Type: Composite Kemmerer: 96B	↓	0-12'	—	✓	
HRM 188.5W-EGBL	✓	0930	Type: Composite Kemmerer: —	—	—	—		
			Type: Composite Kemmerer:					
			Type: Composite Kemmerer:					

Additional Notes:

Weather Data
Description: SUNNY
Temperature: 28°F @ 1130
Wind: CALM
Precipitation: NONE

Sampled by: William Ayling

311035

GENERAL ELECTRIC COMPANY
1998 POST-CONSTRUCTION REMNANT DEPOSIT MONITORING PROGRAM

FIELD LOG FOR January 6, 1998 (Sampling Date)

Station	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
HRM 197.0 (County Rt. 27 Bridge)	0900	Type: Composite Kemmerer: 95	2°C	0-7'	MS	✓	Bakers Falls: no flow over falls
HRM 194.2 (Rt. 197 Bridges Comp. - East and Main Channel)	1000	Type: Composite Kemmerer: 96A	2°C	0-6'E 0-5'W	-	✓	
HRM 188.5 (Thompson Island Dam)	1130	Type: Grab	2°C	Surface	~~DUP~~ MS	✓	Total depth at N. face of dam: 3.3'
Equipment blank: HRM 188.5	1005	Type: Grab Kemmerer: —					
TID-PRW2	1155	Type: Composite Kemmerer: 96B	2°C	0-8'	DUP	✓	Total depth ~ 10.4'
SCH	1245	Type: Composite Kemmerer: 96B	2°C	0-12'	—	—	
Ft. Edward Staff Gage (518) 747-9900	0927						Level: 21.33 ~ 3,300 cfs
Additional Notes:							

Weather Data
Description: foggy, light mist
Temperature: 39°F @ 0926
Wind: calm
Precipitation: Mist

Sampled by: W. Ayling

311036

GENERAL ELECTRIC COMPANY
1998 POST-CONSTRUCTION REMNANT DEPOSIT MONITORING PROGRAM

FIELD LOG FOR January 9, 1998 (Sampling Date) Storm Events Sampling

Station	Time	Sample Data	Water Temp.	Sample Depths	QA/QC Sample	Inspect Sample	Comments
HRM 197.0 (County Rt. 27 Bridge)	—	Type: Composite Kemmerer:					Bakers Falls:
HRM 194.2 (Rt. 197 Bridges Comp. - East and Main Channel)	0905W 0918E	Type: Composite Kemmerer: 96A		0-10W 0-10.5E			
HRM 188.5 (Thompson Island Dam)	—	Type: Grab		~~0-10W 0-10.5E~~			
Equipment blank: HRM 194.2	0900	Type: Grab Kemmerer: 96A					
TID-PRW2	—	Type: Composite Kemmerer:					
SCH	—	Type: Composite Kemmerer:					
Ft. Edward Staff Gage (518) 747-9900	0842						Level: 27.66
Additional Notes:							

Weather Data
Description: Overcast
Temperature:
Wind: Calm
Precipitation: none

Sampled by: W. Ayling

APPENDIX D

PCB data packages
(Bound Separately)

APPENDIX E

TSS data packages

NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
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1/16/98

O'BRIEN & GERE ENGINEERS
5000 BRITTONFIELD PARKWAY
PO BOX 4873
SYRACUSE, NY 13221
CONTACT: WILLIAM AYLING

MATRIX :	WATER		**DATE SAMPLED:**	1/9/98	
DATE RECEIVED:	1/9/98	**TIME:** 10:50	**PROJECT:**	612.244.118	
SAMPLED BY:	W. AYLING		**LOCATION:**	GE - HUDSON RIVER	
			LAB ELAP #:	11078	

NEA ID:	CUSTOMER ID :	METHOD:	RESULTS	PQL	UNITS	DATE TESTED
AB00073	HRM 194.2	TSS:EPA Meth. 160.2	37	5.3	mg/L	1/14/98

Note: ND (Not Detected) Denotes analyte not detected at a concentration greater than the PQL
PQL (Practical Quantitation Limit) Denotes lowest analyte concentration reportable for the sample

AUTHORIZED SIGNATURE: R. Chris Wagner

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

311039

NORTHEAST ANALYTICAL

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1/16/98

O'BRIEN & GERE ENGINEERS
5000 BRITTONFIELD PARKWAY
PO BOX 4873
SYRACUSE, NY 13221
CONTACT: WILLIAM AYLING

MATRIX :	WATER	**PROJECT:**	612.245.518
DATE RECEIVED:	1/10 98 **TIME:** 17:05	**LOCATION:**	HUDSON RIVER-WCM HIGH FLOW
SAMPLED BY:	W. AYLING	**LAB ELAP #:**	11078
CUSTOMER PO:	N/A		

NEA ID:	CUSTOMER ID :	METHOD:	DATE SAMPLED	RESULTS	PQL	UNITS	DATE TESTED
AB00091	HRM 197.0-1	TSS:EPA Meth. 160.2	1/10/98	28	4.4	mg/L	1/14/98
AB00092	SHOOK KILL-1	TSS:EPA Meth. 160.2	1/10/98	63	7.7	mg/L	1/14/98
AB00093	HRM 194.2E-1	TSS:EPA Meth. 160.2	1/9/98	32	5.3	mg/L	1/14/98
AB00094	HRM 188.5W-1	TSS:EPA Meth. 160.2	1/9/98	37	5.3	mg/L	1/14/98
AB00095	MOSES CR	TSS:EPA Meth. 160.2	1/10/98	150	13	mg/L	1/14/98
00096	SCH-1	TSS:EPA Meth. 160.2	1/9/98	76	6.7	mg/L	1/14/98
AB00098	SHOOK KILL-2	TSS:EPA Meth. 160.2	1/10/98	50	7.1	mg/L	1/14/98
AB00099	MOSES CR	TSS:EPA Meth. 160.2	1/10/98	160	13	mg/L	1/14/98
AB00100	HRM 194.2E-2	TSS:EPA Meth. 160.2	1/10/98	34	4.5	mg/L	1/14/98
AB00101	HRM 188.5W-2	TSS:EPA Meth. 160.2	1/10/98	37	4.8	mg/L	1/14/98
AB00102	SCH-2	TSS:EPA Meth. 160.2	1/10/98	72	5.6	mg/L	1/14/98
AB00103	DUP-1	TSS:EPA Meth. 160.2	1/10/98	35	4.5	mg/L	1/14/98
AB00106	HRM 194.2E-3	TSS:EPA Meth. 160.2	1/10/98	33	4.5	mg/L	1/14/98
AB00107	HRM 188.5W-3	TSS:EPA Meth. 160.2	1/10/98	40	4.5	mg/L	1/14/98
AB00108	SCH-3	TSS:EPA Meth. 160.2	1/10/98	68	6.3	mg/L	1/14/98
AB00110	HRM 194.2W-4	TSS:EPA Meth. 160.2	1/10/98	31	4.5	mg/L	1/14/98
AB00111	HRM 194.2E-4	TSS:EPA Meth. 160.2	1/10/98	35	4.3	mg/L	1/14/98
AB00112	HRM 188.5W-4	TSS:EPA Meth. 160.2	1/10/98	41	5.9	mg/L	1/14/98
AB00113	HRM 188.5E-4	TSS:EPA Meth. 160.2	1/10/98	55	5.9	mg/L	1/14/98
AB00114	SCH-4	TSS:EPA Meth. 160.2	1/10/98	62	5.6	mg/L	1/14/98
AB00115	DUP-2	TSS:EPA Meth. 160.2	1/10/98	53	6.3	mg/L	1/14/98
AB00117	HRM 194.2W-5	TSS:EPA Meth. 160.2	1/10/98	34	4.4	mg/L	1/14/98
AB00118	HRM 194.2E-5	TSS:EPA Meth. 160.2	1/10/98	33	4.8	mg/L	1/14/98

Note: ND (Not Detected) Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit) Denotes lowest analyte concentration reportable for the sample

AUTHORIZED SIGNATURE: G. Wagner

heast Analytical, Inc.
ert E. Wagner, Laboratory Director

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

311040

NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

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1/16/98

O'BRIEN & GERE ENGINEERS
5000 BRITTONFIELD PARKWAY
PO BOX 4873
SYRACUSE, NY 13221
CONTACT: WILLIAM AYLING

MATRIX :	WATER	**PROJECT:**	612.245.518
DATE RECEIVED:	1/10/98 **TIME:** 17:05	**LOCATION:**	HUDSON RIVER-WCM HIGH FLOW
SAMPLED BY:	W. AYLING	**LAB ELAP #:**	11078
CUSTOMER PO:	N/A		

NEA ID:	CUSTOMER ID :	METHOD:	DATE SAMPLED	RESULTS	PQL	UNITS	DATE TESTED
AB00119	HRM 188.5W-5	TSS:EPA Meth. 160.2	1/10/98	38	5.3	mg/L	1/14/98
AB00120	HRM 188.5E-5	TSS:EPA Meth. 160.2	1/10/98	50	5.6	mg/L	1/14/98
AB00121	SCH-5	TSS:EPA Meth. 160.2	1/10/98	50	5.3	mg/L	1/14/98
AB00123	HRM 194.2W-6	TSS:EPA Meth. 160.2	1/10/98	33	4.3	mg/L	1/14/98
AB00124	HRM 194.2E-6	TSS:EPA Meth. 160.2	1/10/98	34	4.5	mg/L	1/14/98
00125	HRM 188.5W-6	TSS:EPA Meth. 160.2	1/10/98	37	4.5	mg/L	1/14/98
AB00126	HRM 188.5E-6	TSS:EPA Meth. 160.2	1/10/98	47	5.3	mg/L	1/14/98
AB00127	SCH-6	TSS:EPA Meth. 160.2	1/10/98	51	5.3	mg/L	1/14/98
AB00129	MOSES CR	TSS:EPA Meth. 160.2	1/10/98	110	9.1	mg/L	1/14/98
AB00130	SHOOK KILL-5	TSS:EPA Meth. 160.2	1/10/98	44	5.6	mg/L	1/14/98

Note: ND (Not Detected) Denotes analyte not detected at a concentration greater than the PQL.
PQL (Practical Quantitation Limit) Denotes lowest analyte concentration reportable for the sample

AUTHORIZED SIGNATURE: _____

heast Analytical, Inc.
oert E. Wagner, Laboratory Director

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ENVIRONMENTAL LAB SERVICES

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CERTIFICATE OF ANALYSIS
JANUARY 16, 1998

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5000 Brittonfield Parkway
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Syracuse, NY 13221
Contact: Mr. William Ayling

SAMPLE MATRIX: WATER DATE ANALYZED: SEE BELOW LAB ELAP #: 11078

Quality Control Data for Nonfilterable Residue

Method Blank Summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
AB00113B	< 1.0	1.0	1/14/98

Reference Sample Summary

NEA #	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS
AB00113LCS	87.1	85.3	97.9	85-115

REFERENCE SAMPLE: ERA small lab Wastewater Lot# 8065: total suspended solids sample.

Duplicate Sample Summary

NEA#	SAMPLE CONC. (mg/L)	DUPLICATE SAMPLE CONC. (mg/L)	% RPD	% RPD LIMITS
AB00095	148	140	5.6	20

Authorized Signature: _____

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

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REW\JP

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
1/16/98

O'BRIEN & GERE ENGINEERS
5000 BRITTONFIELD PARKWAY
PO BOX 4873
SYRACUSE, NY 13221
CONTACT: WILLIAM AYLING

MATRIX :	WATER	**PROJECT:**	612.245.518
DATE RECEIVED:	1/12/98 **TIME:** 13:48	**LOCATION:**	HUDSON RIVER-WCM HIGH FLOW
SAMPLED BY:	W. AYLING	**LAB ELAP #:**	11078
CUSTOMER PO:	N/A		

NEA ID:	CUSTOMER ID :	METHOD:	DATE SAMPLED	RESULTS	PQL	UNITS	DATE TESTED
AB00131	HRM 197.0-7	TSS:EPA Meth. 160.2	1/11/98	15	2.4	mg/L	1/14/98
AB00132	HRM 194.2-7	TSS:EPA Meth. 160.2	1/11/98	17	2.3	mg/L	1/14/98
AB00134	HRM 188.5-7	TSS:EPA Meth. 160.2	1/11/98	20	2.8	mg/L	1/14/98
AB00135	DUP-3	TSS:EPA Meth. 160.2	1/11/98	21	2.9	mg/L	1/14/98
AB00136	SCH-7	TSS:EPA Meth. 160.2	1/11/98	27	3.8	mg/L	1/14/98
[illegible]0138	HRM 194.2-8	TSS:EPA Meth. 160.2	1/11/98	13	2.1	mg/L	1/14/98
[illegible]00139	HRM 188.5W-8	TSS:EPA Meth. 160.2	1/11/98	15	2.4	mg/L	1/14/98
AB00140	SCH-8	TSS:EPA Meth. 160.2	1/11/98	21	2.7	mg/L	1/14/98
AB00141	HRM 197.0-9	TSS:EPA Meth. 160.2	1/12/98	5.0	1.2	mg/L	1/14/98
AB00143	HRM 194.2-9	TSS:EPA Meth. 160.2	1/12/98	6.3	1.3	mg/L	1/14/98
AB00144	HRM 188.5W-9	TSS:EPA Meth. 160.2	1/12/98	7.9	1.5	mg/L	1/14/98
AB00146	SCH-9	TSS:EPA Meth. 160.2	1/12/98	9.5	1.6	mg/L	1/14/98
AB00147	DUP-4	TSS:EPA Meth. 160.2	1/12/98	6.5	1.4	mg/L	1/14/98

Note: ND (Not Detected) Denotes analyte not detected at a concentration greater than the PQL
PQL (Practical Quantitation Limit) Denotes lowest analyte concentration reportable for the sample

AUTHORIZED SIGNATURE: _____

[illegible]heast Analytical, Inc.
[illegible]rt E. Wagner, Laboratory Director

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

311043

NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
JANUARY 16, 1998

O'BRIEN & GERE ENGINEERS, INC.
5000 Brittonfield Parkway
Suite 300, PO Box 4873
Syracuse, NY 13221
Contact: Mr. William Ayling

SAMPLE MATRIX: WATER DATE ANALYZED: SEE BELOW LAB ELAP #: 11078

Quality Control Data for Nonfilterable Residue

Method Blank Summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
AB00113B	< 1.0	1.0	1/14/98

Reference Sample Summary

NEA #	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS
AB00113LCS	87.1	85.3	97.9	85-115

REFERENCE SAMPLE: ERA small lab Wastewater Lot# 8065: total suspended solids sample.

Duplicate Sample Summary

NEA#	SAMPLE CONC. (mg/L)	DUPLICATE SAMPLE CONC. (mg/L)	% RPD	% RPD LIMITS
AB00095	148	140	5.6	20

Authorized Signature: _____

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

S:\CERT97\11698C.OBG
REW\JP

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

311044

NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
JANUARY 16, 1998

O'BRIEN & GERE ENGINEERS, INC.
5000 Brittonfield Parkway
Suite 300, PO Box 4873
Syracuse, NY 13221
Contact: Mr. William Ayling

SAMPLE MATRIX: WATER DATE ANALYZED: SEE BELOW LAB ELAP #: 11078

Quality Control Data for Nonfilterable Residue

Method Blank Summary

NEA #	RESULTS (mg/L)	DETECTION LIMIT (mg/L)	DATE ANALYZED
AB00113B	< 1.0	1.0	1/14/98

Reference Sample Summary

NEA #	REFERENCE VALUE (mg/L)	RESULTS (mg/L)	% RECOVERY	%RECOVERY LIMITS
AB00113LCS	87.1	85.3	97.9	85-115

REFERENCE SAMPLE: ERA small lab Wastewater Lot# 8065: total suspended solids sample.

Duplicate Sample Summary

NEA#	SAMPLE CONC. (mg/L)	DUPLICATE SAMPLE CONC. (mg/L)	% RPD	% RPD LIMITS
AB00095	148	140	5.6	20

Authorized Signature: _____

Northeast Analytical, Inc.
Robert E. Wagner, Laboratory Director

S:\CERT97\11698A.OBG
REW\JP

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

311045

O'BRIEN & GERE ENGINEERS, INC.

Job No. 612.244.178

Sheet 1 of 1

Office: Syracuse

ddress:

Phone: 315-437-6100

CHAIN OF CUSTODY

LRF#98010020

CLIENT: General Electric
LOCATION: Hudson River

COLLECTED BY: William Ayling
(Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
300073 Hsm 194.2	1/9/98	0915	W	Comp	3	PCBs, NEA60ECAP; TSS
300074 Hsm 194.2-EqBl	"	0900	"	Grab	2	PCBs, USEPA 8082
0°C Cooler temp.						

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: William Ayling of: O'Brien & Gere	1/9/98	1050	Received by: Melissa Dougherty of: Northeast Analytical	1/9/98	10:50
Relinquished by: of:			Received by: of:		
Relinquished by: of:			Received by: of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: of:			Courier Name: *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: of:			Received by: of:		

311046

\\forms\qam\custody.wpd

Job No. 612.245.518

Sheet 1 of 3

Office: Syracuse

Address:

Phone: (315) 437-6100

CHAIN OF CUSTODY

LRF #98010025

CLIENT: General Electric Company

LOCATION: Hudson River -WCM High Flow

COLLECTED BY: (Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
HRM 197.0 – 1 AB00091	1/10/98	0100	W	Comp.	2	PCBs. NEA 608CAP. TSS
~~HRM 194.2W~~ Shook K.11-1 AB00092 ✓	1/6/98	0015	W	Comp.	~~2~~ 3	~~PCBs. NEA 608CAP. TSS~~, Solids
HRM 194.2E – 1 AB00093	1/9/98	2320	W	Comp.	2	PCBs. NEA 608CAP. TSS
HRM 188.5W – 1 AB00094	1/9/98	2350	W	Grab	2	PCBs. NEA 608CAP. TSS
~~HRM 188.5E~~ Mass AB00095 ✓	1/10/98	0025	W	Grab	~~2~~ 3	~~PCBs. NEA 608CAP. TSS~~, Solids
SCH – 1 AB00096	1/9/98	2355	W	Comp.	2	PCBs. NEA 608CAP. TSS
HRM 197.0-1MS AB00097	1/9/98	0100	W	Comp	1	PCBs, NEA608CAP
~~HRM 197.0~~ Shook K.11-2 AB00098 ✓	1/10/98	0510	W	Comp.	~~2~~ 3	~~PCBs. NEA 608CAP. TSS~~, Solids
~~HRM 194.2W~~ Mass AB00099 ✓	1/10/98	0500	W	Comp.	~~2~~ 3	~~PCBs. NEA 608CAP. TSS~~, Solids
HRM 194.2E – 2 AB00100	1/10/98	0200	W	Comp.	2	PCBs. NEA 608CAP. TSS
HRM 188.5W – 2 AB00101	1/10/98	0225	W	Grab	2	PCBs. NEA 608CAP. TSS
~~R.M 188.5E~~			W	Grab	2	PCBs. NEA 608CAP. TSS
SCH – 2 AB00102	1/10/98	0200	W	Comp.	2	PCBs. NEA 608CAP. TSS
DUP. 1 AB00103	1/10/98	—	W	—	2	PCBs NEA608CAP, TSS

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: / *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: / of: O'Brien & Gere Engineers, Inc.	Date 1/8/98	Time	Received by: / of: Northeast Analytical, Inc.	Date 1/9/98	Time 5:30pm

Job No. 612.245.518

Sheet 2 of 3

Office: Syracuse

Address:

Phone: (315) 437-6100

CHAIN OF CUSTODY

LRF# 98010025

CLIENT: General Electric Company

LOCATION: Hudson River -WCM High Flow

COLLECTED BY: (Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
~~HRM 197.0~~ AB00104 HRM 188.5W-EGBL	1/9/98	2234	W	~~Comp.~~ GRAB	1 ~~2~~	PCBs, NEA 608CAP. ~~TSS~~
~~HRM 194.2W~~ AB00105 HRM 188.5E-EGBL	1/9/98	2227	W	~~Comp.~~ GRAB	1 ~~2~~	PCBs, NEA 608CAP. ~~TSS~~
HRM 194.2E - 3 AB00106	1/10/98	0430	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 188.5W - 3 AB00107	1/10/98	0455	W	Grab	2	PCBs, NEA 608CAP. TSS
~~HRM 188.5E~~ ~~AB~~			~~W~~	~~Grab~~	~~2~~	~~PCBs, NEA 608CAP. TSS~~
SCH - 3 AB00108	1/10/98	0445	W	Comp.	2	PCBs, NEA 608CAP. TSS
AB00109 KEM 96B-EGBL	1/9/98	2230	W	GRAB	1	PCBs, NEA 608CAP
~~HRM 197.0~~			~~W~~	~~Comp.~~	~~2~~	PCBs, NEA 608CAP. TSS
HRM 194.2W - 4 AB00110	1/10/98	0915	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2E - 4 AB00111	1/10/98	0815	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 188.5W - 4 AB00112	1/10/98	0955	W	Grab	2	PCBs, NEA 608CAP. TSS
HRM 188.5E - 4 AB00113	1/10/98	0835	W	Grab	2	PCBs, NEA 608CAP. TSS
SCH - 4 AB00114	1/10/98	0900	W	Comp.	2	PCBs, NEA 608CAP. TSS
DUP-2 AB00115	1/10/98	—	W	—	2	PCBs, NEA 608CAP, TSS

[1] Matrix = water, wastewater, air, sludge, sediment, etc.

[2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: / *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: / of: O'Brien & Gere Engineers, Inc.	Date 1/10/98	Time 1515	Received by: / of: Northeast Analytical, Inc.	Date 1/10/98	Time 5:30pm

djb/i:52/0612245/4/hghfl.coc

January 9, 1998

311048

Job No. 612.245.518

Sheet 3 of 3

Office: Syracuse

Address:

Phone: (315) 437-6100

CHAIN OF CUSTODY

LRF#9801002,5

CLIENT: General Electric Company
LOCATION: Hudson River -WCM High Flow

COLLECTED BY: (Signature)

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
~~HRM 197.0~~ AR00116 KEM 95-EGGL1	1/9/98	2232	W	~~Comp.~~ GRAB	1 2	PCBs, NEA 608CAP. ~~TSS~~
HRM 194.2W - 5 AR00117	1/10/98	1020	W	Comp.	X 4	PCBs, NEA 608CAP. TSS, Solids
HRM 194.2E - 5 AR00118	1/10/98	1020	W	Comp.	X 4	PCBs, NEA 608CAP. TSS Solids
HRM 188.5W - 5 AR00119	1/10/98	1125	W	Grab	X 4	PCBs, NEA 608CAP. TSS, Solids
HRM 188.5E - 5 AR00120	1/10/98	1115	W	Grab	X 4	PCBs, NEA 608CAP. TSS Solids
SCH - 5 AR00121	1/10/98	1145	W	Comp.	X 4	PCBs, NEA 608CAP. TSS, Solids
AR00122 KEM96A-EGGL1	1/9/98	2224	W	GRAB	1	PCBs, NEA 608 CAP
~~HRM 197.0~~			W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2W - 6 AR00123	1/10/98	1250	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2E - 6 AR00124		1250	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 188.5W - 6 AR00125		1315	W	Grab	2	PCBs, NEA 608CAP. TSS
HRM 188.5E - 6 AR00126		1310	W	Grab	2	PCBs, NEA 608CAP. TSS
SCH - 6 AR00127	↓	1340	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2-6MS AR00128	1/10/98	1272	W	Comp	1	PCBs, NEA608CAP

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: / of: O'Brien & Gere Engineers, Inc.	1/10/98	5:05pm	Received by: / of: Northeast Analytical, Inc.	1/12/98	5:30pm

djb/i:52/0612245/4/hghfl.coc

January 9, 1998

311049

Job No. 612.245.518
Sheet ____ of ____

Office: Syracuse
ess: _____
Phone: (315) 437-6100

CHAIN OF CUSTODY

LRF #98010026

CLIENT: General Electric Company
LOCATION: Hudson River -WCM High Flow

COLLECTED BY: (Signature) William Ayling

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
HRM 197.0 -7 AB00131	1/11/98	0840	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2W -7 AB00132	"	0935	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2E -7MS AB00133	"	0935	W	Comp.	1 ~~2~~	PCBs, NEA 608CAP. ~~TSS~~
HRM 188.5W -7 AB00134	"	0955	W	Grab	2	PCBs, NEA 608CAP. TSS
~~HRM 188.5E~~ DUP-3 AB00135	"	—	W	Grab	2	PCBs, NEA 608CAP. TSS
SCH -7 AB00136	"	1020	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2 - EQBLAB00137	1/11/98	0905	W	GRAB	1	PCBs NEA 608CAP
~~HRM 197.0~~	—	—	~~W~~	~~Comp.~~	~~2~~	~~PCBs, NEA 608CAP. TSS~~
~~HRM 194.2W~~	—	—	~~W~~	~~Comp.~~	~~2~~	~~PCBs, NEA 608CAP. TSS~~
HRM 194.2E -8 AB00138	1/11/98	1545	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 188.5W -8 AB00139	1/11/98	1610	W	Grab	2	PCBs, NEA 608CAP. TSS
~~HRM 188.5E~~	—	—	~~W~~	~~Grab~~	~~2~~	~~PCBs, NEA 608CAP. TSS~~
SCH -8 AB00140	1/11/98	1630	W	Comp.	2	PCBs, NEA 608CAP. TSS

Temp cooler #1 4°C
Temp. cooler #2 3°C

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: / *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: William Ayling / of: O'Brien & Gere Engineers, Inc.	Date: 1/12/98	Time: 1348	Received by: [signature] / of: Northeast Analytical, Inc.	Date: 01/12/98	Time: 13:48

Job No. 612.245.518

Sheet ____ of ____

Office: Syracuse

Address: _____

Phone: (315) 437-6100

CHAIN OF CUSTODY

LRF #98010026

CLIENT: **General Electric Company**

LOCATION: **Hudson River -WCM High Flow**

COLLECTED BY: William Ayling *(Signature)*

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
HRM 197.0 -9 AB00141	1/12/98	1055	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM ~~194.2W~~ 197.0-9MS AB00142	↓	1055	W	Comp.	1 2	PCBs, NEA 608CAP. ~~TSS~~
HRM 194.2E -9 AB00143	↓	1200	W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 188.5W -9 AB00144	↓	1220	W	Grab	2	PCBs, NEA 608CAP. TSS
HRM 188.5E -9 EQBL AB00145	↓	0930	W	Grab	1 2	PCBs, NEA 608CAP. ~~TSS~~
SCH -9 AB00146	↓	1240	W	Comp.	2	PCBs, NEA 608CAP. TSS
DUP-4 AB00147	↓	—	W	—	2	PCBs, NEA 608CAP, TSS
HRM 197.0			W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2W			W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 194.2E			W	Comp.	2	PCBs, NEA 608CAP. TSS
HRM 188.5W			W	Grab	2	PCBs, NEA 608CAP. TSS
HRM 188.5E			W	Grab	2	PCBs, NEA 608CAP. TSS
SCH			W	Comp.	2	PCBs, NEA 608CAP. TSS

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Relinquished by: / of:	Date	Time	Received by: / of:	Date	Time
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: / of:	Date	Time	Courier Name: / *Attach delivery/courier receipt to Chain of Custody	Date	Time
Relinquished by: William Ayling / of: O'Brien & Gere Engineers, Inc.	Date 1/12/98	Time 1348	Received by: [signature] / of: Northeast Analytical, Inc.	Date 01/12/98	Time 13:48

djb/i:52/0612245/4/hghfl.coc

January 9, 1998

311051

APPENDIX F

High volume sample data

UNIVERSITY OF MINNESOTA

Twin Cities Campus

Limnological Research Center
Newton Horace Winchell
School of Earth Sciences

220 Pillsbury Hall
310 Pillsbury Drive S.E.
Minneapolis, MN 55455-0219
612-624-7005
Fax: 612-625-3819

O'Brien & Gere Engineers, Inc.
5000 Brittonfiled Parkway
P.O. Box 4873; Suite 300
Syracuse, NY 13221
Attn. William Ayling

February 2, 1998

Particle size analyses were conducted at the University of Minnesota Limnological Research Center External Services Organization for the following 11 samples sent to us by Northeast Analytical Environmental Lab Services:

Shook Kill-1 (NEA AB00092)	Moses Cr (NEA AB00095)
Shook Kill-2 (NEA AB00098)	Moses Cr (NEA AB00099)
HRM 194.2 W-5 (NEA AB00117)	HRM 194.2 E-5 (NEA AB00118)
HRM 188.5 W-5 (NEA AB00119)	HRM 188.5 E-5 (NEA AB00120)
SCH-5 (NEA AB00121)	Moses Cr (NEA AB00129)
Shook Kill (NEA AB00130)	

The analyses were made with a Lazentec particle size analyzer, a laser-based instrument. According to instructions, whole sediment was analysed. The samples were treated with 0.25% Calgon, followed by 45 seconds ultrasonication to try to deflocculate the samples. I refer you to the appended information sheet for additional technical information.

Brian Haskell

Dr. Brian Haskell

Senior Scientist

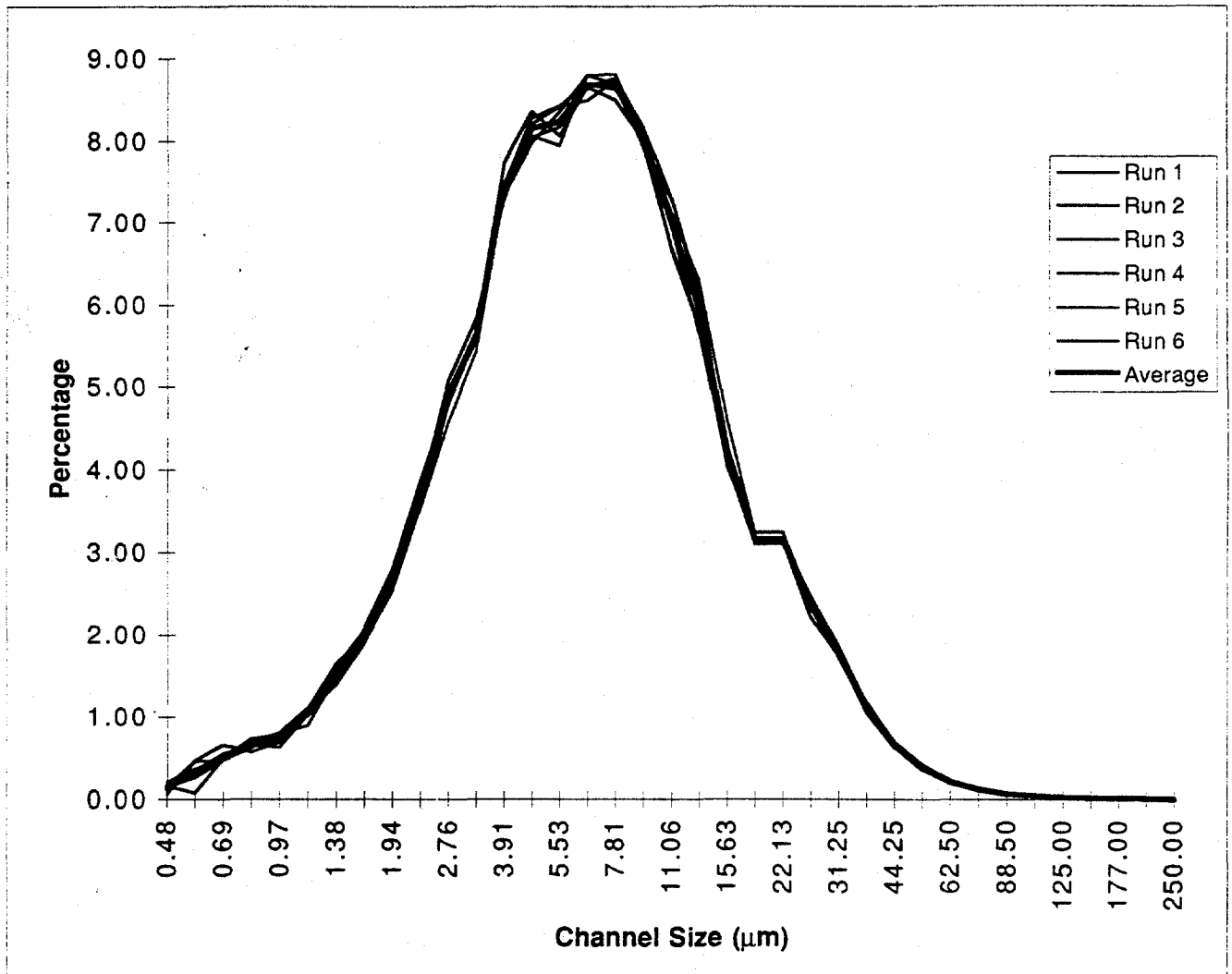
311053

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00118 Client: Northeast Analytical

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		16:57:28	16:58:20	16:59:12	17:00:06	17:00:58	17:01:52
Mean (µ)	9.38	9.24	9.35	9.34	9.40	9.47	9.47
Med. (µ)	6.92	6.79	6.80	6.84	6.95	7.08	7.06
StdDev (µ)	9.28	9.00	9.66	9.49	9.61	8.95	8.96
Skew.	0.26	0.27	0.26	0.26	0.25	0.27	0.27
Kurt.	81.43	54.10	126.68	91.64	124.27	44.14	47.77
C. of Var.	98.96	97.39	103.40	101.61	102.25	94.51	94.60
Counts	4539.34	4363	4404	4384	4519	4833	4732

LRC ID AB00118

Sample: AB00118

Particle size distributions in percent per size channel

Diameter (µm)	Average	Run 1 01/30/98 16:57:28	Run 2 01/30/98 16:58:20	Run 3 01/30/98 16:59:12	Run 4 01/30/98 17:00:06	Run 5 01/30/98 17:00:58	Run 6 01/30/98 17:01:52
0.48	0.13	0.14	0.06	0.10	0.14	0.16	0.20
0.58	0.32	0.45	0.46	0.34	0.26	0.07	0.36
0.69	0.51	0.47	0.65	0.54	0.47	0.48	0.47
0.83	0.64	0.68	0.56	0.64	0.62	0.72	0.61
0.97	0.74	0.80	0.68	0.62	0.77	0.78	0.78
1.16	1.04	1.10	1.08	1.02	1.08	0.88	1.05
1.38	1.51	1.43	1.64	1.60	1.53	1.49	1.39
1.66	1.98	2.08	1.96	2.05	1.98	1.91	1.89
1.94	2.67	2.78	2.70	2.63	2.66	2.52	2.75
2.33	3.69	3.85	3.77	3.72	3.71	3.54	3.52
2.76	4.84	4.87	4.94	5.07	4.83	4.78	4.57
3.28	5.63	5.35	5.67	5.82	5.55	5.65	5.42
3.91	7.44	7.48	7.74	7.28	7.33	7.42	7.37
4.66	8.15	8.28	8.35	8.20	7.96	8.05	8.04
5.53	8.22	8.42	8.06	8.42	8.35	7.94	8.16
6.56	8.68	8.48	8.65	8.68	8.79	8.80	8.66
7.81	8.69	8.74	8.49	8.63	8.69	8.81	8.76
9.31	8.04	7.92	8.01	8.09	7.97	8.06	8.17
11.06	6.98	6.68	6.65	6.92	7.27	7.09	7.30
13.13	5.94	5.76	5.73	5.65	6.08	6.30	6.15
15.63	4.23	4.30	4.02	4.07	4.20	4.59	4.22
18.63	3.15	3.12	3.23	3.09	3.10	3.22	3.14
22.13	3.15	3.12	3.23	3.09	3.10	3.22	3.14
26.25	2.37	2.21	2.40	2.45	2.35	2.34	2.47
31.25	1.77	1.74	1.84	1.71	1.76	1.74	1.86
37.25	1.11	1.11	1.10	1.09	1.04	1.17	1.16
44.25	0.66	0.63	0.68	0.67	0.61	0.68	0.68
52.50	0.38	0.35	0.37	0.40	0.39	0.36	0.42
62.50	0.21	0.21	0.21	0.21	0.22	0.18	0.21
74.50	0.12	0.13	0.12	0.11	0.12	0.11	0.11
88.50	0.06	0.06	0.07	0.06	0.06	0.06	0.06
105.00	0.04	0.03	0.04	0.04	0.03	0.04	0.03
125.00	0.02	0.03	0.02	0.02	0.02	0.03	0.02
149.00	0.02	0.02	0.02	0.02	0.01	0.02	0.01
177.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
210.00	0.01	0.00	0.00	0.02	0.02	0.00	0.01
250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

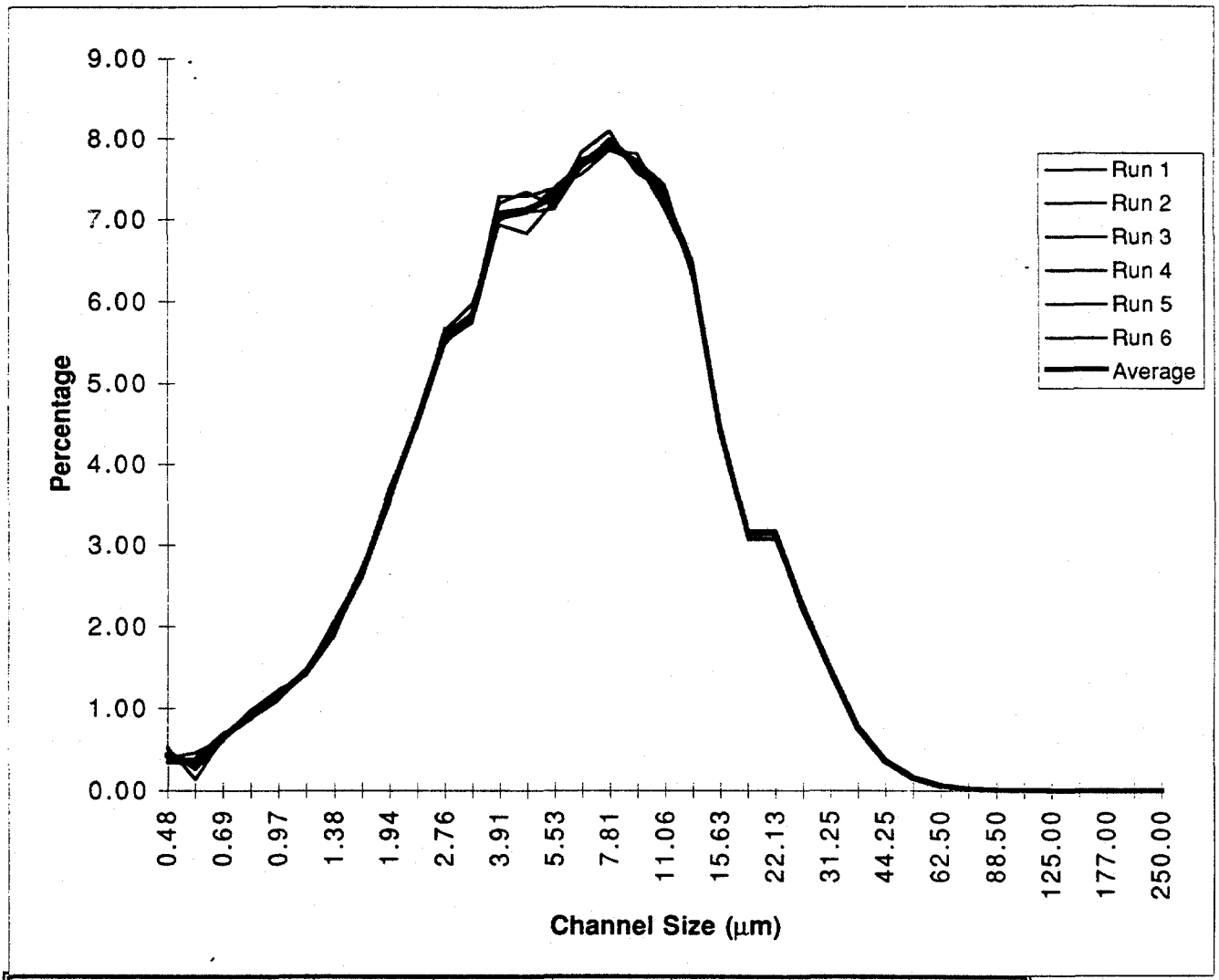
LRC ID AB00118

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00099 Client: Northeast Analytical

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		16:48:20	16:49:12	16:50:06	16:50:58	16:51:50	16:52:44
Mean (µ)	8.51	8.53	8.51	8.52	8.50	8.48	8.55
Med. (µ)	6.50	6.51	6.54	6.50	6.49	6.45	6.52
StdDev (µ)	7.21	7.26	7.15	7.20	7.16	7.26	7.21
Skew.	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Kurt.	24.04	27.07	18.66	19.77	17.31	38.45	22.99
C. of Var.	84.63	85.13	83.97	84.54	84.25	85.56	84.36
Counts	16314.55	16363	16198	16224	16355	16382	16365

LRC ID AB00099

Sample: AB00099

Particle size distributions in percent per size channel

Diameter (µm)	Average	Run 1 01/30/98 16:48:20	Run 2 01/30/98 16:49:12	Run 3 01/30/98 16:50:06	Run 4 01/30/98 16:50:58	Run 5 01/30/98 16:51:50	Run 6 01/30/98 16:52:44
0.48	0.43	0.39	0.33	0.36	0.46	0.53	0.49
0.58	0.31	0.45	0.33	0.39	0.34	0.13	0.25
0.69	0.63	0.61	0.66	0.68	0.63	0.61	0.59
0.83	0.91	0.90	0.95	0.87	0.86	0.97	0.93
0.97	1.15	1.15	1.09	1.09	1.15	1.21	1.19
1.16	1.43	1.47	1.43	1.42	1.45	1.40	1.40
1.38	1.97	2.00	2.01	2.06	1.98	1.88	1.91
1.66	2.65	2.61	2.72	2.66	2.58	2.68	2.62
1.94	3.59	3.54	3.51	3.53	3.57	3.69	3.66
2.33	4.53	4.57	4.54	4.50	4.53	4.46	4.57
2.76	5.56	5.57	5.64	5.66	5.50	5.47	5.52
3.28	5.83	5.86	5.96	5.76	5.81	5.86	5.74
3.91	7.07	7.05	6.93	7.00	7.20	7.28	6.99
4.66	7.12	7.08	6.82	7.07	7.33	7.28	7.11
5.53	7.25	7.11	7.21	7.37	7.14	7.37	7.32
6.56	7.68	7.65	7.82	7.67	7.74	7.55	7.64
7.81	7.93	8.00	8.09	7.93	7.84	7.85	7.88
9.31	7.69	7.70	7.57	7.63	7.80	7.73	7.71
11.06	7.30	7.12	7.34	7.36	7.21	7.37	7.41
13.13	6.36	6.40	6.47	6.30	6.38	6.27	6.33
15.63	4.43	4.51	4.49	4.46	4.36	4.36	4.41
18.63	3.13	3.16	3.06	3.16	3.16	3.08	3.18
22.13	3.13	3.16	3.06	3.16	3.16	3.08	3.18
26.25	2.22	2.20	2.20	2.26	2.17	2.18	2.28
31.25	1.47	1.51	1.47	1.44	1.48	1.44	1.48
37.25	0.76	0.77	0.77	0.75	0.74	0.75	0.78
44.25	0.35	0.36	0.33	0.34	0.36	0.35	0.35
52.50	0.15	0.15	0.15	0.15	0.14	0.15	0.15
62.50	0.06	0.06	0.06	0.06	0.06	0.06	0.06
74.50	0.02	0.02	0.02	0.02	0.02	0.02	0.02
88.50	0.01	0.01	0.01	0.01	0.01	0.01	0.01
105.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00
125.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

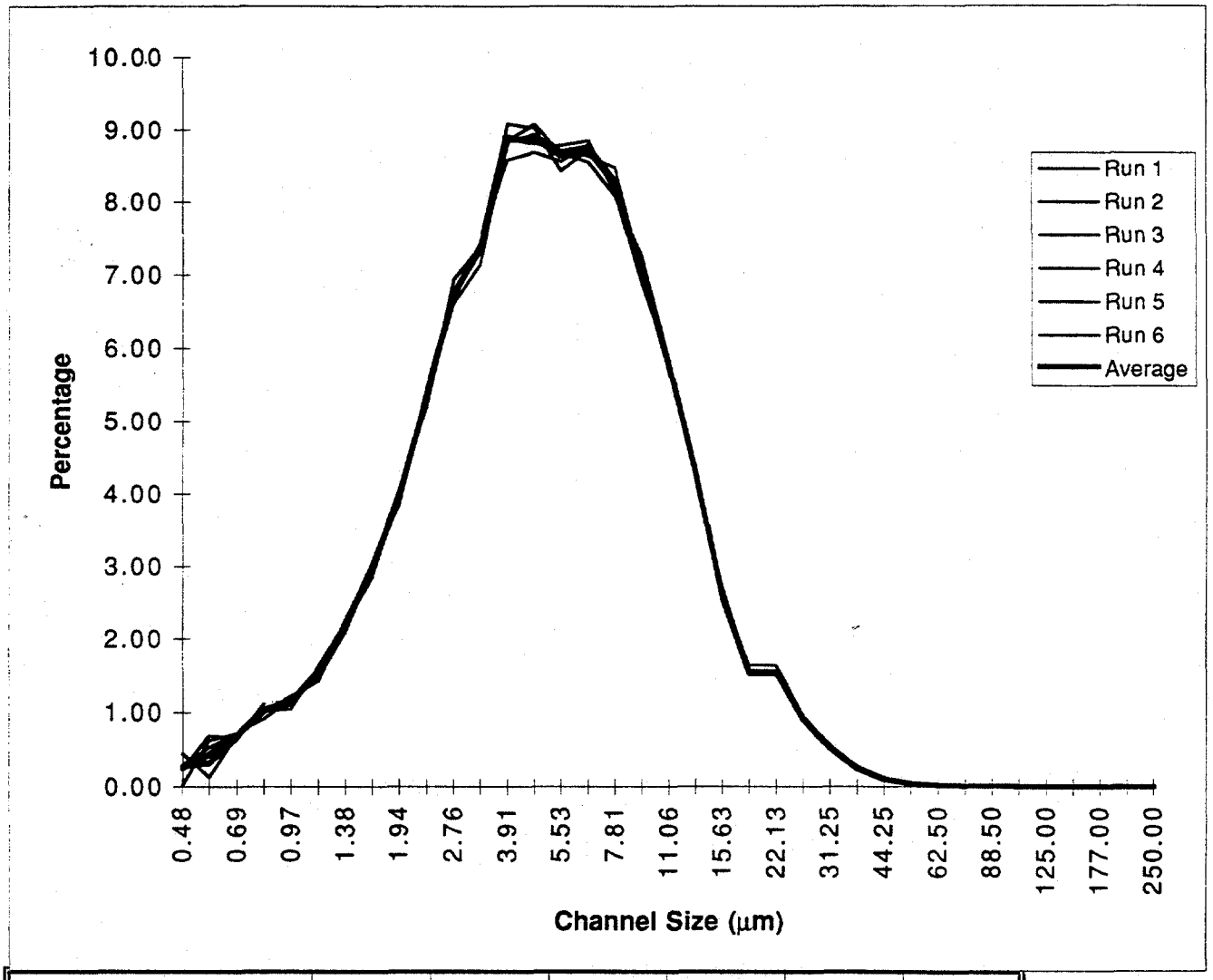
LRC ID AB00099

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00098 Client: Northeast Analytical

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		16:39:00	16:39:52	16:40:46	16:41:38	16:42:30	16:43:24
Mean (µ)	6.85	6.86	6.82	6.83	6.82	6.89	6.86
Med. (µ)	5.40	5.42	5.37	5.40	5.40	5.41	5.42
StdDev (µ)	5.43	5.57	5.35	5.36	5.35	5.56	5.40
Skew.	0.27	0.26	0.27	0.27	0.27	0.26	0.27
Kurt.	37.35	59.14	25.09	20.70	26.40	65.34	27.41
C. of Var.	79.33	81.20	78.43	78.50	78.41	80.73	78.69
Counts	11703.65	11701	11766	11683	11622	11781	11668

LRC ID AB00098

Sample: AB00098

Particle size distributions in percent per size channel

Diameter (μm)	Average	Run 1 01/30/98 16:39:00	Run 2 01/30/98 16:39:52	Run 3 01/30/98 16:40:46	Run 4 01/30/98 16:41:38	Run 5 01/30/98 16:42:30	Run 6 01/30/98 16:43:24
0.48	0.25	0.23	0.28	0.00	0.45	0.28	0.26
0.58	0.43	0.69	0.34	0.62	0.12	0.52	0.29
0.69	0.69	0.66	0.70	0.72	0.69	0.72	0.63
0.83	1.02	1.04	1.04	1.01	1.01	0.90	1.11
0.97	1.14	1.08	1.16	1.04	1.21	1.17	1.20
1.16	1.53	1.60	1.50	1.62	1.42	1.59	1.45
1.38	2.16	2.08	2.18	2.21	2.25	2.18	2.08
1.66	2.99	2.99	2.98	3.05	3.00	2.84	3.05
1.94	3.96	3.88	3.97	3.82	4.04	4.04	4.01
2.33	5.31	5.46	5.27	5.34	5.19	5.32	5.31
2.76	6.72	6.76	6.68	6.73	6.92	6.59	6.67
3.28	7.35	7.41	7.43	7.44	7.38	7.13	7.33
3.91	8.85	8.57	9.08	8.84	8.87	8.84	8.91
4.66	8.89	8.67	9.02	8.93	8.80	9.07	8.82
5.53	8.63	8.55	8.42	8.70	8.77	8.66	8.66
6.56	8.72	8.79	8.71	8.77	8.84	8.55	8.63
7.81	8.23	8.30	8.22	8.23	8.11	8.07	8.46
9.31	7.06	7.10	7.16	6.97	6.87	7.25	7.02
11.06	5.77	5.84	5.68	5.69	5.81	5.85	5.74
13.13	4.30	4.33	4.28	4.33	4.35	4.28	4.24
15.63	2.58	2.56	2.56	2.56	2.50	2.60	2.71
18.63	1.54	1.52	1.52	1.51	1.50	1.64	1.56
22.13	1.54	1.52	1.52	1.51	1.50	1.64	1.56
26.25	0.91	0.92	0.89	0.91	0.92	0.94	0.89
31.25	0.53	0.51	0.53	0.53	0.55	0.54	0.52
37.25	0.24	0.24	0.24	0.24	0.23	0.24	0.25
44.25	0.10	0.10	0.10	0.10	0.10	0.10	0.11
52.50	0.04	0.05	0.04	0.04	0.04	0.04	0.04
62.50	0.02	0.02	0.02	0.02	0.02	0.02	0.02
74.50	0.01	0.01	0.01	0.01	0.01	0.01	0.01
88.50	0.00	0.01	0.00	0.00	0.00	0.00	0.00
105.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00
125.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

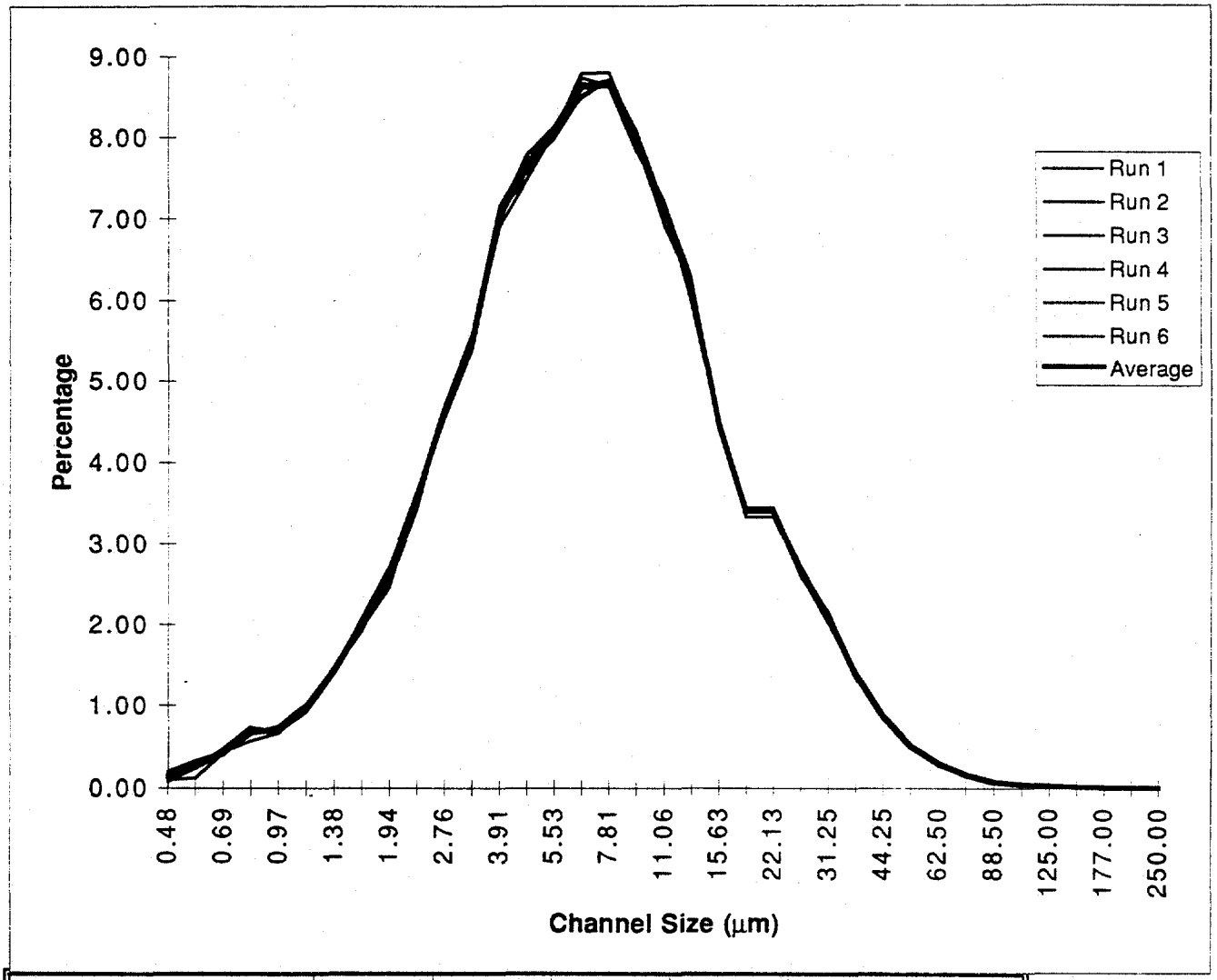
LRC ID AB00098

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		18:09:08	18:10:00	18:10:54	18:11:46	18:12:38	18:13:32
Mean (µ)	9.90	9.92	9.92	9.94	9.89	9.83	9.87
Med. (µ)	7.21	7.26	7.23	7.20	7.19	7.16	7.22
StdDev (µ)	9.78	9.65	9.73	9.99	9.90	9.85	9.57
Skew.	0.27	0.28	0.28	0.27	0.27	0.27	0.28
Kurt.	61.01	46.38	49.39	65.20	71.50	83.82	49.77
C. of Var.	98.85	97.22	98.05	100.55	100.07	100.17	97.03
Counts	8120.03	8182	8171	8191	8037	8073	8066

LRC ID AB00119

Sample:

311060

Particle size distributions in percent per size channel

Diameter (μm)	Average	Run 1 01/30/98 18:09:08	Run 2 01/30/98 18:10:00	Run 3 01/30/98 18:10:54	Run 4 01/30/98 18:11:46	Run 5 01/30/98 18:12:38	Run 6 01/30/98 18:13:32
0.48	0.13	0.19	0.17	0.09	0.15	0.12	0.07
0.58	0.25	0.32	0.23	0.11	0.30	0.31	0.24
0.69	0.44	0.43	0.46	0.42	0.44	0.40	0.48
0.83	0.67	0.57	0.65	0.73	0.66	0.68	0.74
0.97	0.70	0.66	0.72	0.68	0.75	0.69	0.69
1.16	0.96	0.99	0.93	0.94	1.00	0.97	0.91
1.38	1.42	1.46	1.43	1.42	1.44	1.38	1.38
1.66	2.00	1.95	1.91	2.06	2.00	2.01	2.07
1.94	2.60	2.45	2.61	2.52	2.69	2.64	2.70
2.33	3.56	3.59	3.49	3.41	3.64	3.62	3.59
2.76	4.63	4.67	4.67	4.69	4.61	4.63	4.53
3.28	5.44	5.44	5.39	5.57	5.36	5.50	5.39
3.91	7.05	6.90	7.10	7.15	6.99	7.05	7.12
4.66	7.61	7.46	7.47	7.68	7.63	7.77	7.65
5.53	8.07	8.05	8.09	8.13	8.09	8.12	7.97
6.56	8.62	8.78	8.73	8.60	8.47	8.66	8.51
7.81	8.68	8.79	8.64	8.62	8.69	8.63	8.71
9.31	7.95	8.01	7.86	7.83	7.94	7.96	8.08
11.06	7.12	7.06	7.19	7.21	7.19	6.92	7.16
13.13	6.16	6.15	6.28	6.20	5.97	6.20	6.17
15.63	4.46	4.52	4.41	4.52	4.46	4.42	4.39
18.63	3.39	3.40	3.43	3.32	3.37	3.39	3.44
22.13	3.39	3.40	3.43	3.32	3.37	3.39	3.44
26.25	2.64	2.60	2.69	2.63	2.71	2.58	2.61
31.25	2.09	2.15	2.13	2.07	2.08	2.10	2.01
37.25	1.37	1.38	1.35	1.39	1.37	1.35	1.41
44.25	0.86	0.86	0.85	0.83	0.87	0.86	0.89
52.50	0.51	0.53	0.50	0.52	0.50	0.48	0.50
62.50	0.30	0.32	0.31	0.31	0.28	0.28	0.27
74.50	0.15	0.15	0.15	0.17	0.15	0.14	0.17
88.50	0.07	0.06	0.07	0.07	0.08	0.07	0.08
105.00	0.04	0.04	0.04	0.04	0.04	0.04	0.03
125.00	0.03	0.03	0.03	0.02	0.03	0.02	0.02
149.00	0.01	0.01	0.01	0.02	0.01	0.01	0.01
177.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
210.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01
250.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

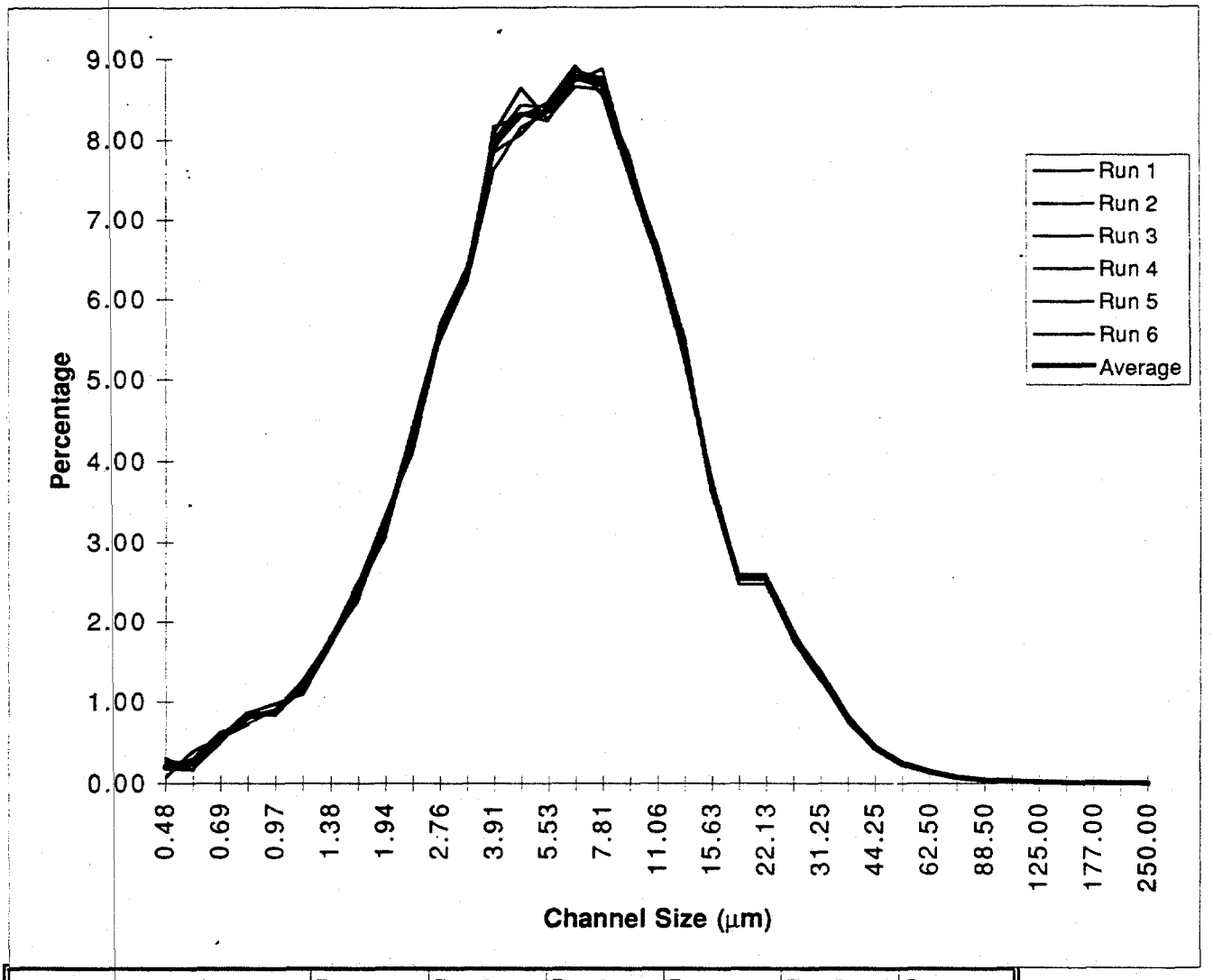
LRC ID AB00119

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00120 Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		18:00:46	18:01:38	18:02:30	18:03:24	18:04:16	18:05:08
Mean (μ)	8.42	8.44	8.49	8.42	8.38	8.42	8.39
Med. (μ)	6.33	6.36	6.38	6.32	6.33	6.31	6.29
StdDev (μ)	7.93	7.89	8.19	7.90	7.72	8.08	7.79
Skew.	0.26	0.26	0.26	0.27	0.27	0.26	0.27
Kurt.	70.78	51.03	91.38	85.82	48.52	90.57	57.33
C. of Var.	94.10	93.48	96.43	93.80	92.09	95.91	92.89
Counts	8723.26	8783	8690	8769	8657	8737	8704

LRC ID AB00120

Sample: AB00120

Particle size distributions in percent per size channel

Diameter (µm)	Average	Run 1 01/30/98 18:00:46	Run 2 01/30/98 18:01:38	Run 3 01/30/98 18:02:30	Run 4 01/30/98 18:03:24	Run 5 01/30/98 18:04:16	Run 6 01/30/98 18:05:08
0.48	0.20	0.19	0.07	0.19	0.18	0.30	0.26
0.58	0.24	0.30	0.39	0.16	0.15	0.17	0.27
0.69	0.56	0.62	0.54	0.57	0.57	0.50	0.55
0.83	0.81	0.72	0.83	0.84	0.87	0.86	0.71
0.97	0.88	0.88	0.83	0.87	0.86	0.97	0.87
1.16	1.17	1.25	1.19	1.13	1.16	1.08	1.19
1.38	1.74	1.76	1.80	1.73	1.78	1.70	1.71
1.66	2.38	2.26	2.38	2.39	2.49	2.46	2.31
1.94	3.17	3.20	3.05	3.18	3.12	3.33	3.14
2.33	4.29	4.43	4.40	4.25	4.23	4.09	4.30
2.76	5.57	5.48	5.64	5.59	5.67	5.50	5.54
3.28	6.26	6.21	6.20	6.21	6.40	6.23	6.32
3.91	7.93	7.85	7.63	8.00	7.88	8.16	8.08
4.66	8.31	8.06	8.15	8.43	8.32	8.28	8.64
5.53	8.35	8.42	8.34	8.41	8.23	8.46	8.25
6.56	8.78	8.80	8.85	8.74	8.73	8.91	8.66
7.81	8.71	8.78	8.76	8.66	8.87	8.56	8.62
9.31	7.65	7.65	7.59	7.68	7.66	7.51	7.79
11.06	6.56	6.67	6.66	6.58	6.49	6.47	6.48
13.13	5.33	5.34	5.51	5.21	5.22	5.43	5.24
15.63	3.66	3.62	3.67	3.65	3.79	3.62	3.60
18.63	2.53	2.53	2.47	2.60	2.56	2.47	2.58
22.13	2.53	2.53	2.47	2.60	2.56	2.47	2.58
26.25	1.83	1.86	1.84	1.88	1.76	1.76	1.88
31.25	1.31	1.32	1.38	1.28	1.26	1.38	1.27
37.25	0.80	0.79	0.83	0.79	0.81	0.80	0.75
44.25	0.44	0.45	0.44	0.45	0.44	0.45	0.43
52.50	0.24	0.26	0.22	0.26	0.22	0.23	0.26
62.50	0.14	0.13	0.15	0.14	0.12	0.15	0.14
74.50	0.07	0.07	0.07	0.07	0.07	0.08	0.07
88.50	0.04	0.04	0.04	0.03	0.04	0.04	0.03
105.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02
125.00	0.01	0.02	0.02	0.01	0.01	0.01	0.01
149.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
177.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00
210.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00
250.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

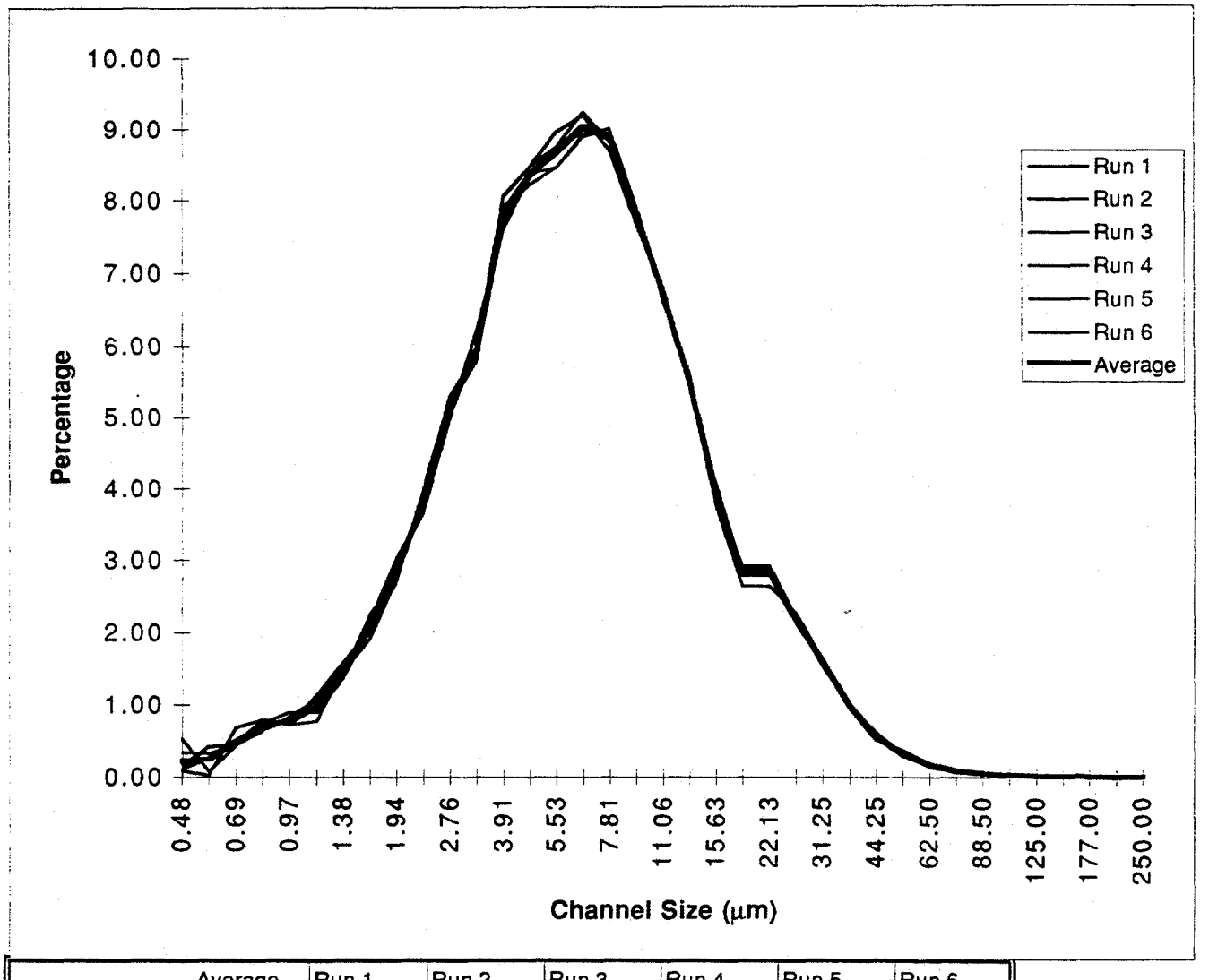
LRC ID AB00120

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00117 Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		17:52:48	17:53:40	17:54:34	17:55:26	17:56:18	17:57:12
Mean (µ)	8.94	8.94	8.94	8.84	9.02	8.94	8.94
Med. (µ)	6.64	6.59	6.66	6.60	6.68	6.68	6.64
StdDev (µ)	8.65	8.83	8.75	8.21	8.99	8.54	8.56
Skew.	0.27	0.27	0.26	0.27	0.26	0.26	0.27
Kurt.	83.78	97.86	114.19	44.99	104.07	83.40	58.16
C. of Var.	96.74	98.76	97.85	92.89	99.63	95.55	95.74
Counts	4312.23	4381	4329	4334	4291	4260	4278

LRC ID AB00117

Sample: AB00117

Particle size distributions in percent per size channel

Diameter (μm)	Average	Run 1 01/30/98 17:52:48	Run 2 01/30/98 17:53:40	Run 3 01/30/98 17:54:34	Run 4 01/30/98 17:55:26	Run 5 01/30/98 17:56:18	Run 6 01/30/98 17:57:12
0.48	0.22	0.09	0.17	0.54	0.10	0.34	0.11
0.58	0.25	0.01	0.41	0.07	0.25	0.32	0.42
0.69	0.49	0.67	0.45	0.43	0.49	0.43	0.45
0.83	0.70	0.79	0.63	0.73	0.77	0.64	0.63
0.97	0.77	0.72	0.83	0.89	0.73	0.77	0.71
1.16	0.97	0.77	1.06	0.89	0.96	0.99	1.13
1.38	1.47	1.48	1.46	1.35	1.43	1.52	1.58
1.66	2.07	2.15	1.91	2.06	2.23	2.02	2.03
1.94	2.82	3.01	2.71	2.93	2.75	2.85	2.67
2.33	3.81	3.65	3.98	3.64	3.76	3.84	3.99
2.76	5.14	5.10	5.29	4.97	5.06	5.15	5.28
3.28	5.93	5.96	5.76	6.00	6.20	5.77	5.91
3.91	7.81	8.05	7.67	8.03	7.62	7.91	7.59
4.66	8.35	8.45	8.33	8.46	8.36	8.20	8.29
5.53	8.64	8.94	8.66	8.73	8.44	8.44	8.64
6.56	9.03	9.18	9.05	9.22	8.90	8.88	8.96
7.81	8.85	8.67	8.85	8.82	8.93	8.99	8.86
9.31	7.80	7.65	7.87	7.65	7.91	7.91	7.84
11.06	6.70	6.74	6.78	6.76	6.58	6.61	6.71
13.13	5.48	5.45	5.41	5.41	5.59	5.53	5.48
15.63	3.87	3.74	3.92	3.82	3.94	4.06	3.77
18.63	2.82	2.63	2.84	2.77	2.89	2.87	2.92
22.13	2.82	2.63	2.84	2.77	2.89	2.87	2.92
26.25	2.17	2.26	2.15	2.12	2.14	2.13	2.21
31.25	1.60	1.61	1.53	1.56	1.63	1.63	1.63
37.25	0.98	0.95	0.99	0.97	0.99	0.99	0.95
44.25	0.57	0.51	0.62	0.56	0.61	0.54	0.56
52.50	0.31	0.37	0.31	0.30	0.32	0.30	0.28
62.50	0.16	0.18	0.13	0.15	0.17	0.16	0.17
74.50	0.08	0.09	0.07	0.08	0.08	0.09	0.08
88.50	0.05	0.05	0.05	0.04	0.04	0.05	0.05
105.00	0.03	0.03	0.02	0.02	0.03	0.02	0.03
125.00	0.02	0.02	0.01	0.01	0.03	0.01	0.02
149.00	0.01	0.02	0.01	0.01	0.01	0.01	0.01
177.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01
210.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
250.00	0.01	0.00	0.00	0.00	0.02	0.01	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

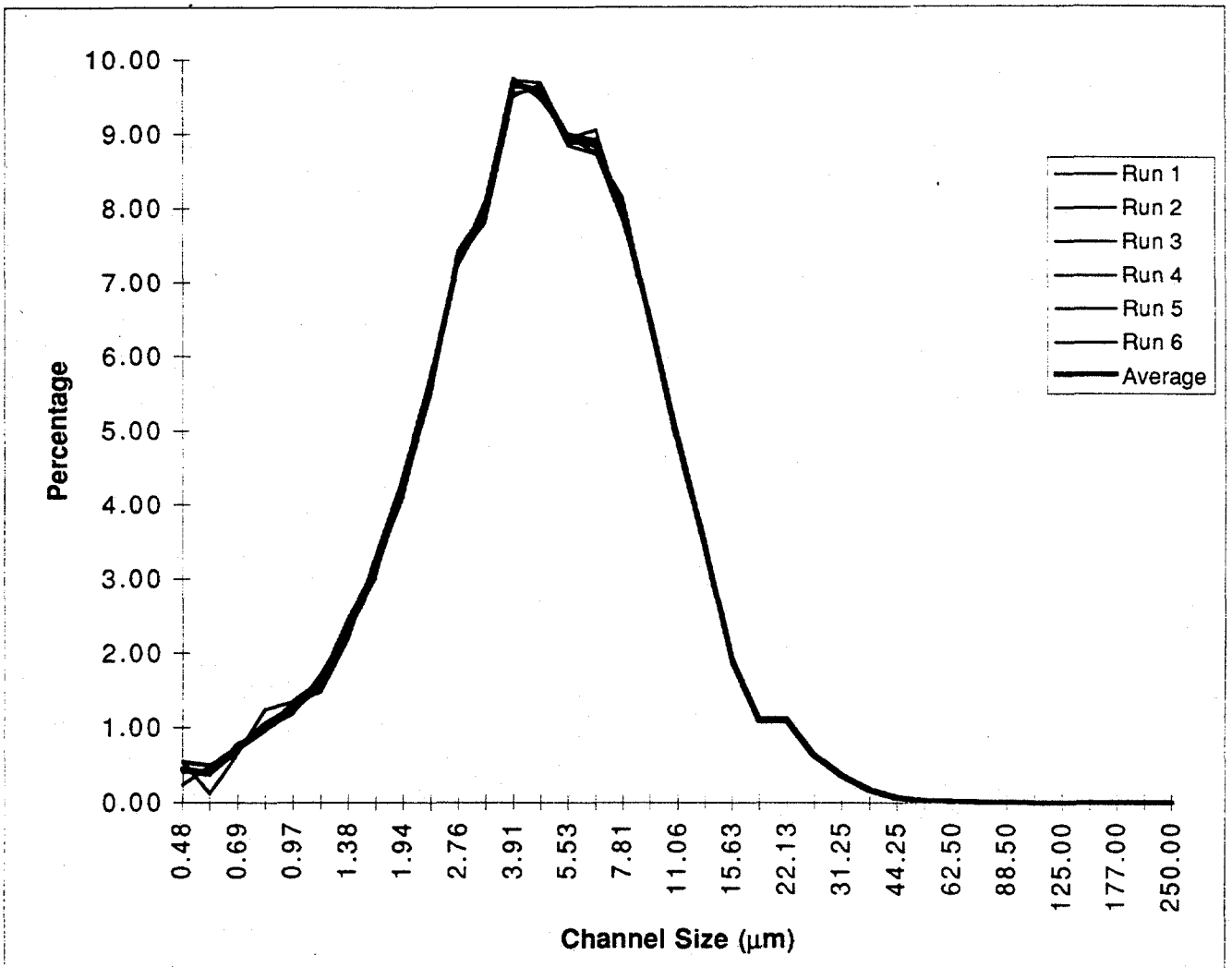
LRC ID AB00117

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00130 Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		17:42:50	17:43:44	17:44:38	17:45:30	17:46:22	17:47:16
Mean (µ)	6.30	6.29	6.33	6.29	6.31	6.27	6.29
Med. (µ)	5.05	5.04	5.08	5.04	5.07	5.03	5.05
StdDev (µ)	4.90	5.04	4.86	4.83	4.83	4.86	5.01
Skew.	0.25	0.25	0.26	0.26	0.26	0.26	0.25
Kurt.	77.10	215.79	20.18	20.22	21.20	47.19	138.02
C. of Var.	77.83	80.11	76.68	76.66	76.48	77.49	79.58
Counts	7468.54	7571	7521	7481	7363	7389	7485

LRC ID AB000130

Sample: AB00130

Particle size distributions in percent per size channel

Diameter (μm)	Average	Run 1 01/30/98 17:42:50	Run 2 01/30/98 17:43:44	Run 3 01/30/98 17:44:38	Run 4 01/30/98 17:45:30	Run 5 01/30/98 17:46:22	Run 6 01/30/98 17:47:16
0.48	0.44	0.54	0.22	0.55	0.41	0.52	0.39
0.58	0.39	0.49	0.48	0.11	0.35	0.48	0.43
0.69	0.71	0.68	0.74	0.65	0.78	0.69	0.72
0.83	1.03	1.02	0.98	1.24	0.96	0.94	1.06
0.97	1.24	1.21	1.20	1.33	1.17	1.33	1.19
1.16	1.61	1.53	1.68	1.46	1.63	1.63	1.71
1.38	2.31	2.28	2.32	2.19	2.47	2.29	2.34
1.66	3.15	3.22	3.04	3.29	3.13	3.00	3.21
1.94	4.25	4.19	4.21	4.37	4.09	4.41	4.25
2.33	5.65	5.47	5.70	5.53	5.67	5.75	5.77
2.76	7.31	7.42	7.22	7.23	7.41	7.32	7.27
3.28	7.90	7.97	7.89	8.10	7.81	7.81	7.83
3.91	9.65	9.71	9.72	9.75	9.50	9.69	9.55
4.66	9.59	9.69	9.54	9.47	9.66	9.59	9.58
5.53	8.93	8.96	8.94	9.00	8.98	8.87	8.84
6.56	8.86	8.74	9.05	8.92	8.82	8.89	8.72
7.81	7.95	7.82	7.87	7.89	8.00	8.02	8.13
9.31	6.48	6.54	6.45	6.41	6.55	6.38	6.53
11.06	4.88	4.96	4.90	4.85	4.90	4.75	4.92
13.13	3.42	3.36	3.53	3.43	3.45	3.37	3.37
15.63	1.90	1.85	1.89	1.90	1.93	1.95	1.88
18.63	1.09	1.08	1.13	1.07	1.09	1.10	1.08
22.13	1.09	1.08	1.13	1.07	1.09	1.10	1.08
26.25	0.62	0.63	0.65	0.63	0.59	0.61	0.62
31.25	0.35	0.35	0.37	0.37	0.35	0.34	0.34
37.25	0.16	0.16	0.16	0.16	0.17	0.16	0.15
44.25	0.07	0.07	0.07	0.06	0.07	0.06	0.06
52.50	0.03	0.02	0.03	0.03	0.02	0.02	0.03
62.50	0.01	0.01	0.01	0.02	0.01	0.01	0.01
74.50	0.01	0.00	0.01	0.01	0.01	0.01	0.00
88.50	0.00	0.00	0.01	0.00	0.01	0.00	0.00
105.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

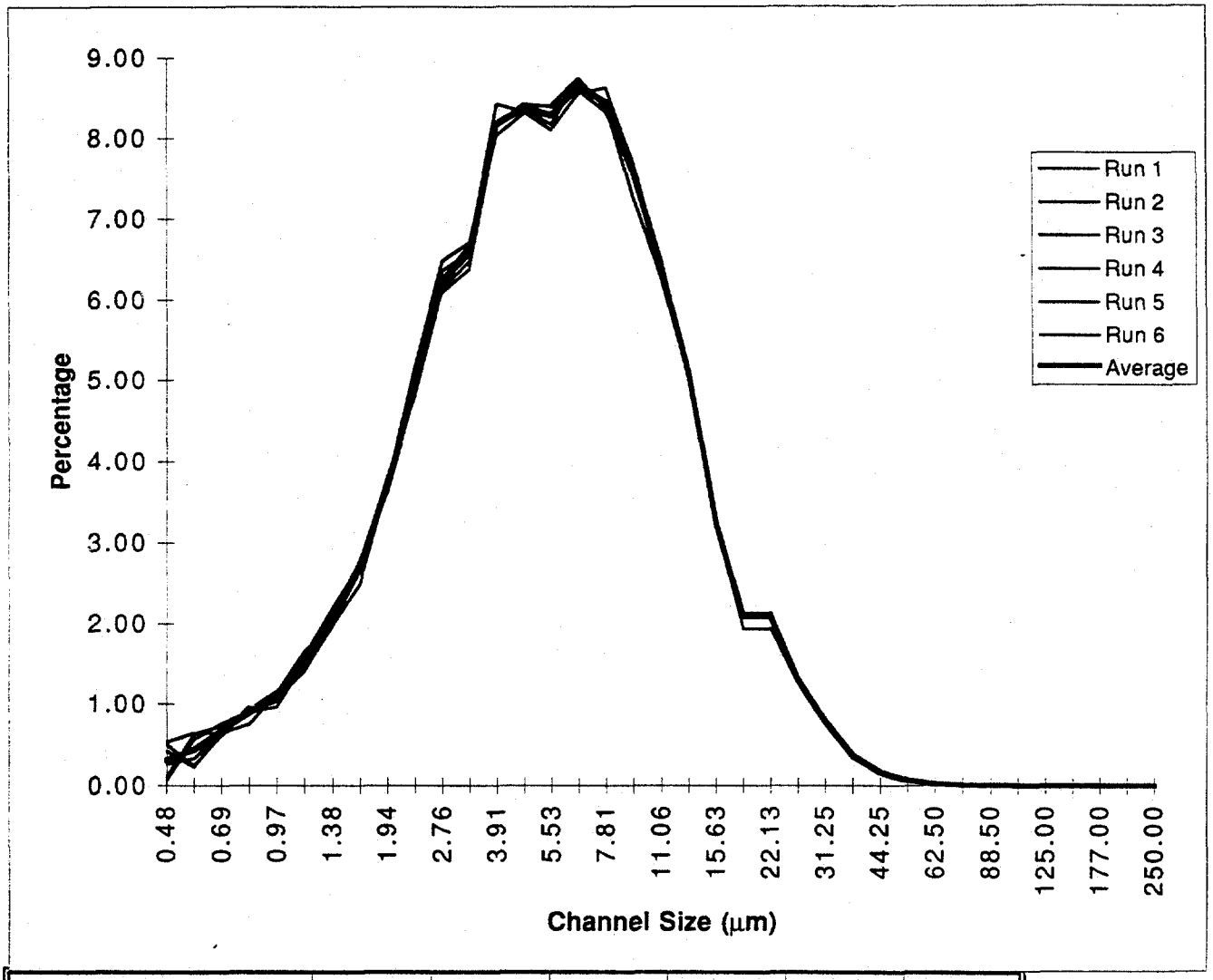
LRC ID AB000130

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00129 Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		17:34:22	17:35:14	17:36:06	17:37:00	17:37:52	17:38:46
Mean (µ)	7.41	7.33	7.42	7.44	7.46	7.42	7.43
Med. (µ)	5.83	5.74	5.84	5.85	5.86	5.84	5.87
StdDev (µ)	5.95	5.87	6.01	5.90	5.96	6.07	5.86
Skew.	0.27	0.27	0.26	0.27	0.27	0.26	0.27
Kurt.	36.43	16.25	78.55	19.77	20.31	64.05	19.62
C. of Var.	80.18	80.02	81.05	79.38	79.96	81.72	78.95
Counts	13545.68	13460	13567	13549	13525	13619	13555

LRC ID AB000129

Sample: AB00129

Particle size distributions in percent per size channel

Diameter (µm)	Average	Run 1 01/30/98 17:34:22	Run 2 01/30/98 17:35:14	Run 3 01/30/98 17:36:06	Run 4 01/30/98 17:37:00	Run 5 01/30/98 17:37:52	Run 6 01/30/98 17:38:46
0.48	0.31	0.09	0.06	0.42	0.50	0.53	0.25
0.58	0.43	0.62	0.56	0.22	0.23	0.64	0.33
0.69	0.66	0.72	0.75	0.64	0.61	0.63	0.63
0.83	0.89	0.88	0.89	0.92	0.92	0.75	0.96
0.97	1.07	1.02	0.95	1.14	1.15	1.12	1.05
1.16	1.49	1.59	1.50	1.39	1.41	1.64	1.40
1.38	2.05	2.19	2.18	1.98	1.96	1.97	2.03
1.66	2.69	2.73	2.72	2.70	2.73	2.48	2.77
1.94	3.70	3.68	3.66	3.81	3.72	3.71	3.61
2.33	4.97	5.17	5.01	4.79	4.97	5.04	4.83
2.76	6.23	6.47	6.35	6.12	6.12	6.08	6.23
3.28	6.58	6.70	6.59	6.64	6.47	6.37	6.68
3.91	8.17	8.14	8.02	8.41	8.15	8.15	8.14
4.66	8.36	8.35	8.30	8.32	8.42	8.39	8.37
5.53	8.27	8.17	8.28	8.09	8.37	8.30	8.40
6.56	8.64	8.71	8.62	8.54	8.59	8.67	8.74
7.81	8.44	8.40	8.46	8.62	8.32	8.46	8.37
9.31	7.56	7.25	7.60	7.70	7.64	7.57	7.62
11.06	6.40	6.27	6.38	6.41	6.46	6.37	6.51
13.13	5.09	5.02	5.13	5.03	5.11	5.09	5.13
15.63	3.25	3.23	3.27	3.31	3.25	3.24	3.19
18.63	2.07	1.93	2.06	2.11	2.13	2.10	2.12
22.13	2.07	1.93	2.06	2.11	2.13	2.10	2.12
26.25	1.29	1.26	1.26	1.28	1.31	1.31	1.31
31.25	0.77	0.80	0.76	0.77	0.78	0.77	0.75
37.25	0.36	0.37	0.36	0.37	0.38	0.35	0.33
44.25	0.15	0.14	0.15	0.16	0.17	0.15	0.15
52.50	0.06	0.06	0.06	0.06	0.07	0.07	0.06
62.50	0.02	0.02	0.02	0.02	0.02	0.02	0.02
74.50	0.01	0.01	0.01	0.01	0.01	0.01	0.01
88.50	0.00	0.00	0.01	0.00	0.01	0.00	0.00
105.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

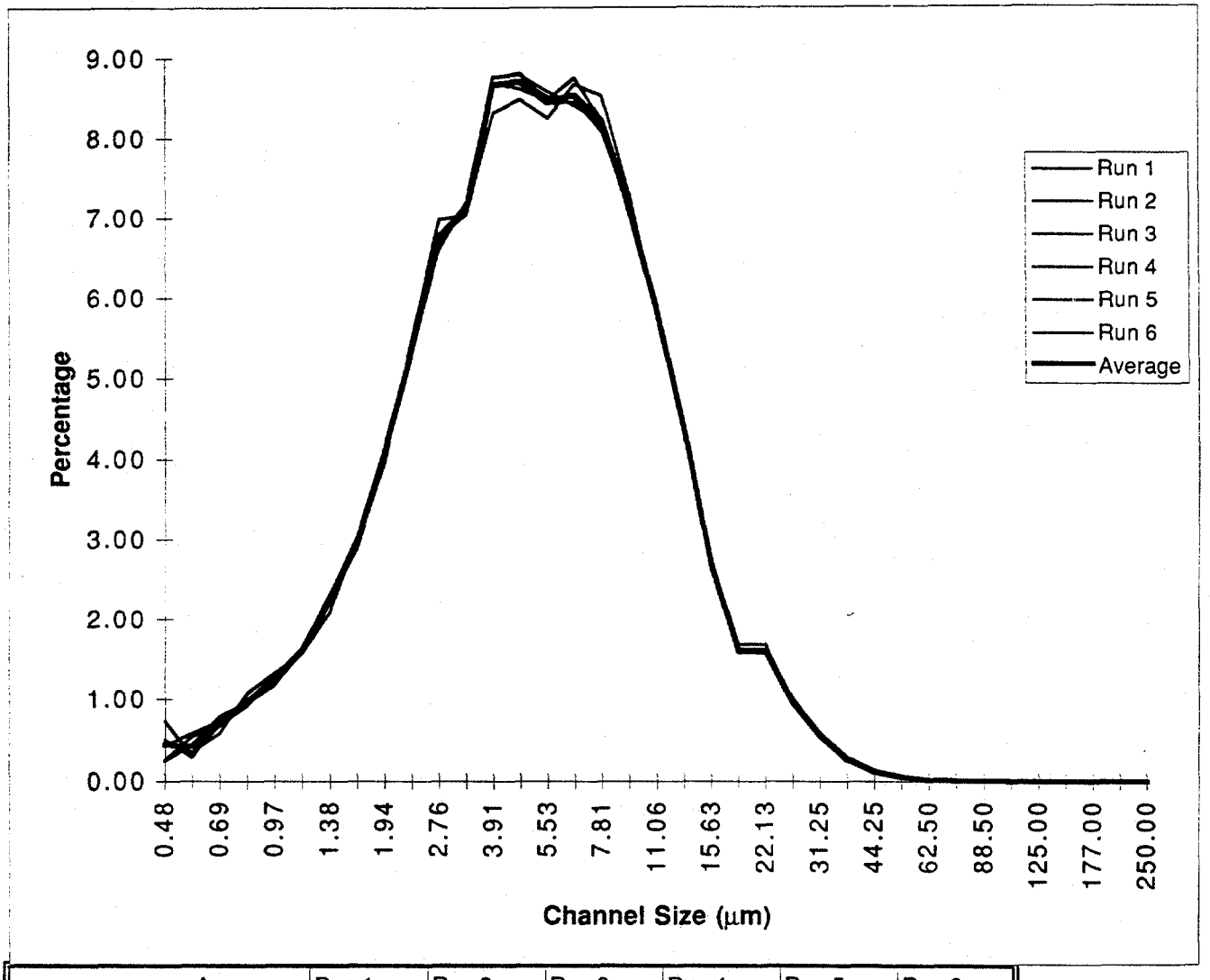
LRC ID AB000129

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00092 Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		17:24:06	17:25:00	17:25:52	17:26:46	17:27:38	17:28:30
Mean (µ)	6.90	6.95	6.90	6.89	6.89	6.88	6.87
Med. (µ)	5.41	5.47	5.39	5.43	5.41	5.41	5.39
StdDev (µ)	5.49	5.55	5.60	5.42	5.42	5.43	5.49
Skew.	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Kurt.	25.32	24.13	44.56	19.19	17.34	15.19	31.50
C. of Var.	79.56	79.85	81.19	78.68	78.77	78.89	80.00
Counts	10675.22	10571	10718	10624	10694	10721	10723

LRC ID AB00092

Sample: AB00092

Particle size distributions in percent per size channel

Diameter (μm)	Average	Run 1 01/30/98 17:24:06	Run 2 01/30/98 17:25:00	Run 3 01/30/98 17:25:52	Run 4 01/30/98 17:26:46	Run 5 01/30/98 17:27:38	Run 6 01/30/98 17:28:30
0.48	0.44	0.24	0.73	0.50	0.48	0.25	0.42
0.58	0.41	0.44	0.30	0.29	0.35	0.54	0.57
0.69	0.69	0.78	0.68	0.71	0.57	0.69	0.72
0.83	0.96	0.95	0.91	0.95	1.06	0.96	0.91
0.97	1.23	1.16	1.28	1.23	1.31	1.17	1.26
1.16	1.59	1.62	1.61	1.59	1.56	1.58	1.60
1.38	2.24	2.30	2.23	2.29	2.08	2.29	2.26
1.66	2.94	2.91	2.88	2.93	3.00	3.03	2.88
1.94	4.08	3.95	4.08	4.12	4.13	4.11	4.09
2.33	5.35	5.48	5.32	5.33	5.33	5.30	5.32
2.76	6.75	6.98	6.68	6.75	6.59	6.75	6.76
3.28	7.11	7.03	7.12	7.04	7.20	7.16	7.09
3.91	8.66	8.31	8.76	8.69	8.75	8.69	8.76
4.66	8.70	8.48	8.81	8.61	8.79	8.72	8.80
5.53	8.45	8.24	8.42	8.47	8.59	8.52	8.46
6.56	8.54	8.67	8.45	8.76	8.41	8.51	8.44
7.81	8.21	8.53	8.10	8.22	8.19	8.08	8.16
9.31	7.14	7.31	7.13	7.03	7.10	7.15	7.10
11.06	5.83	5.77	5.85	5.77	5.90	5.92	5.79
13.13	4.39	4.43	4.38	4.46	4.32	4.37	4.37
15.63	2.69	2.75	2.64	2.73	2.71	2.62	2.70
18.63	1.61	1.68	1.57	1.59	1.61	1.59	1.59
22.13	1.61	1.68	1.57	1.59	1.61	1.59	1.59
26.25	0.96	0.94	0.99	0.92	0.97	1.01	0.93
31.25	0.56	0.57	0.57	0.56	0.55	0.56	0.55
37.25	0.27	0.28	0.28	0.28	0.26	0.26	0.26
44.25	0.11	0.13	0.12	0.12	0.10	0.11	0.11
52.50	0.05	0.05	0.05	0.04	0.04	0.05	0.05
62.50	0.02	0.02	0.02	0.02	0.02	0.02	0.02
74.50	0.01	0.01	0.01	0.01	0.01	0.01	0.01
88.50	0.00	0.01	0.01	0.00	0.00	0.00	0.00
105.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
149.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

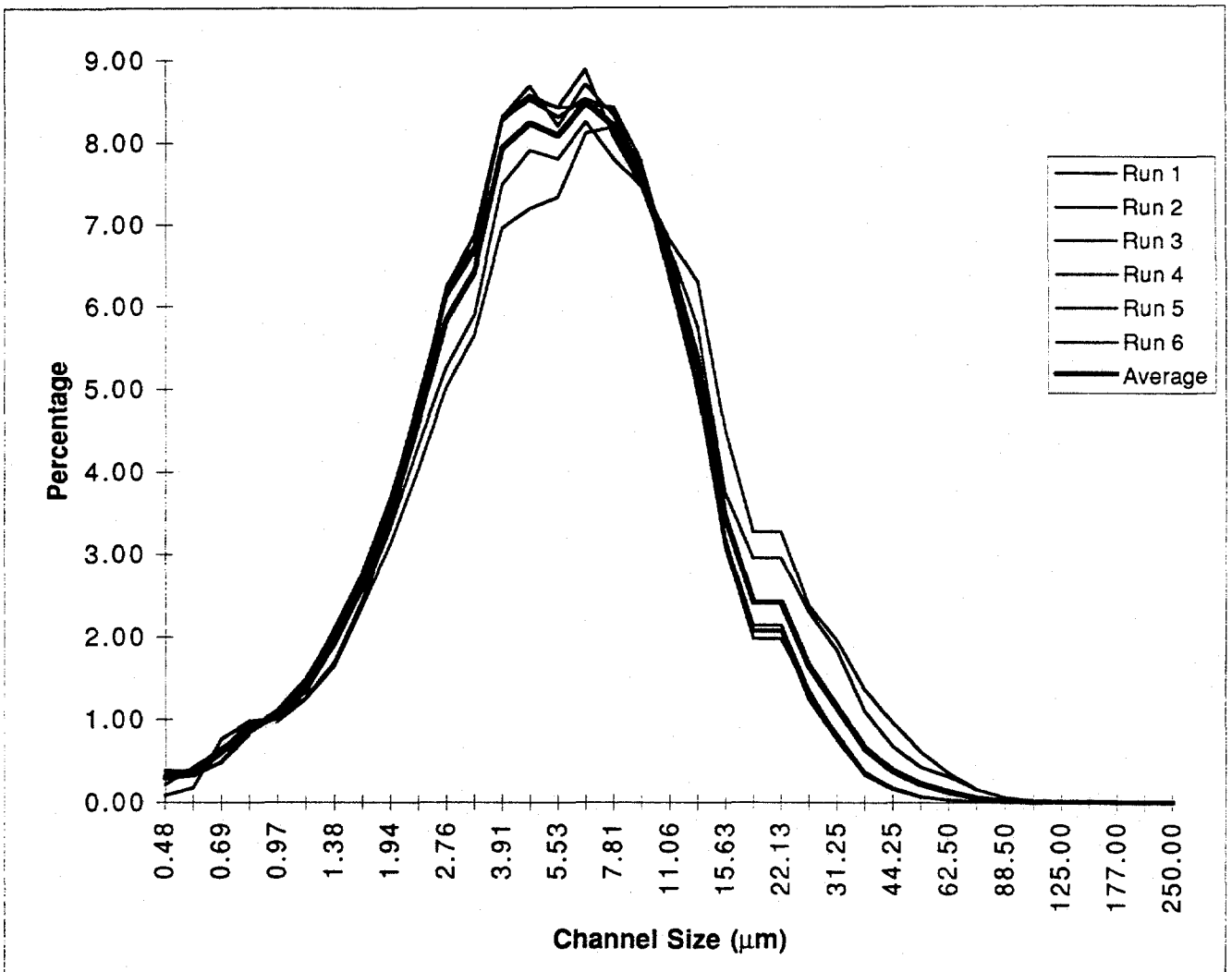
LRC ID AB00092

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00095 Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		17:16:02	17:16:56	17:17:48	17:18:40	17:19:34	17:20:26
Mean (μ)	8.08	7.43	7.39	7.39	7.47	9.09	9.68
Med. (μ)	6.12	5.83	5.80	5.79	5.86	6.51	6.96
StdDev (μ)	7.04	5.91	5.84	6.00	6.01	8.91	9.55
Skew.	0.28	0.27	0.27	0.27	0.27	0.29	0.29
Kurt.	28.04	14.53	12.70	47.08	41.40	26.84	25.70
C. of Var.	86.13	79.54	79.09	81.16	80.39	97.96	98.64
Counts	13208.46	13342	13137	13008	12938	13351	13474

LRC ID AB00095

Sample: AB00095

Particle size distributions in percent per size channel

Diameter (μm)	Average	Run 1 01/30/98 17:16:02	Run 2 01/30/98 17:16:56	Run 3 01/30/98 17:17:48	Run 4 01/30/98 17:18:40	Run 5 01/30/98 17:19:34	Run 6 01/30/98 17:20:26
0.48	0.30	0.39	0.34	0.21	0.08	0.39	0.38
0.58	0.33	0.37	0.40	0.42	0.17	0.33	0.32
0.69	0.61	0.65	0.65	0.63	0.76	0.49	0.47
0.83	0.89	0.84	0.87	0.96	0.97	0.87	0.81
0.97	1.03	1.05	1.10	1.03	1.01	1.02	0.96
1.16	1.36	1.44	1.48	1.42	1.33	1.25	1.23
1.38	1.93	2.10	2.05	2.00	2.10	1.69	1.64
1.66	2.62	2.68	2.70	2.76	2.78	2.45	2.36
1.94	3.48	3.57	3.65	3.67	3.57	3.30	3.11
2.33	4.60	4.80	4.88	4.80	4.80	4.31	4.02
2.76	5.84	6.12	6.15	6.24	6.25	5.26	5.02
3.28	6.42	6.66	6.73	6.86	6.73	5.89	5.65
3.91	7.93	8.30	8.28	8.31	8.26	7.48	6.95
4.66	8.23	8.57	8.51	8.68	8.54	7.90	7.19
5.53	8.08	8.42	8.30	8.20	8.42	7.80	7.33
6.56	8.49	8.88	8.53	8.70	8.44	8.25	8.10
7.81	8.20	8.06	8.38	8.33	8.43	7.79	8.18
9.31	7.58	7.47	7.60	7.68	7.77	7.46	7.51
11.06	6.56	6.55	6.46	6.32	6.52	6.71	6.81
13.13	5.38	5.25	5.04	4.99	4.96	5.75	6.29
15.63	3.45	3.08	3.19	3.07	3.15	3.74	4.48
18.63	2.41	1.98	2.06	2.09	2.14	2.95	3.27
22.13	2.41	1.98	2.06	2.09	2.14	2.95	3.27
26.25	1.64	1.32	1.24	1.27	1.36	2.30	2.37
31.25	1.15	0.82	0.76	0.75	0.80	1.84	1.96
37.25	0.65	0.36	0.36	0.33	0.37	1.11	1.36
44.25	0.38	0.16	0.16	0.16	0.17	0.67	0.96
52.50	0.22	0.07	0.07	0.07	0.07	0.43	0.61
62.50	0.13	0.03	0.03	0.03	0.03	0.31	0.35
74.50	0.06	0.01	0.01	0.01	0.01	0.16	0.16
88.50	0.02	0.01	0.00	0.01	0.00	0.06	0.06
105.00	0.01	0.00	0.00	0.00	0.00	0.03	0.02
125.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02
149.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
177.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

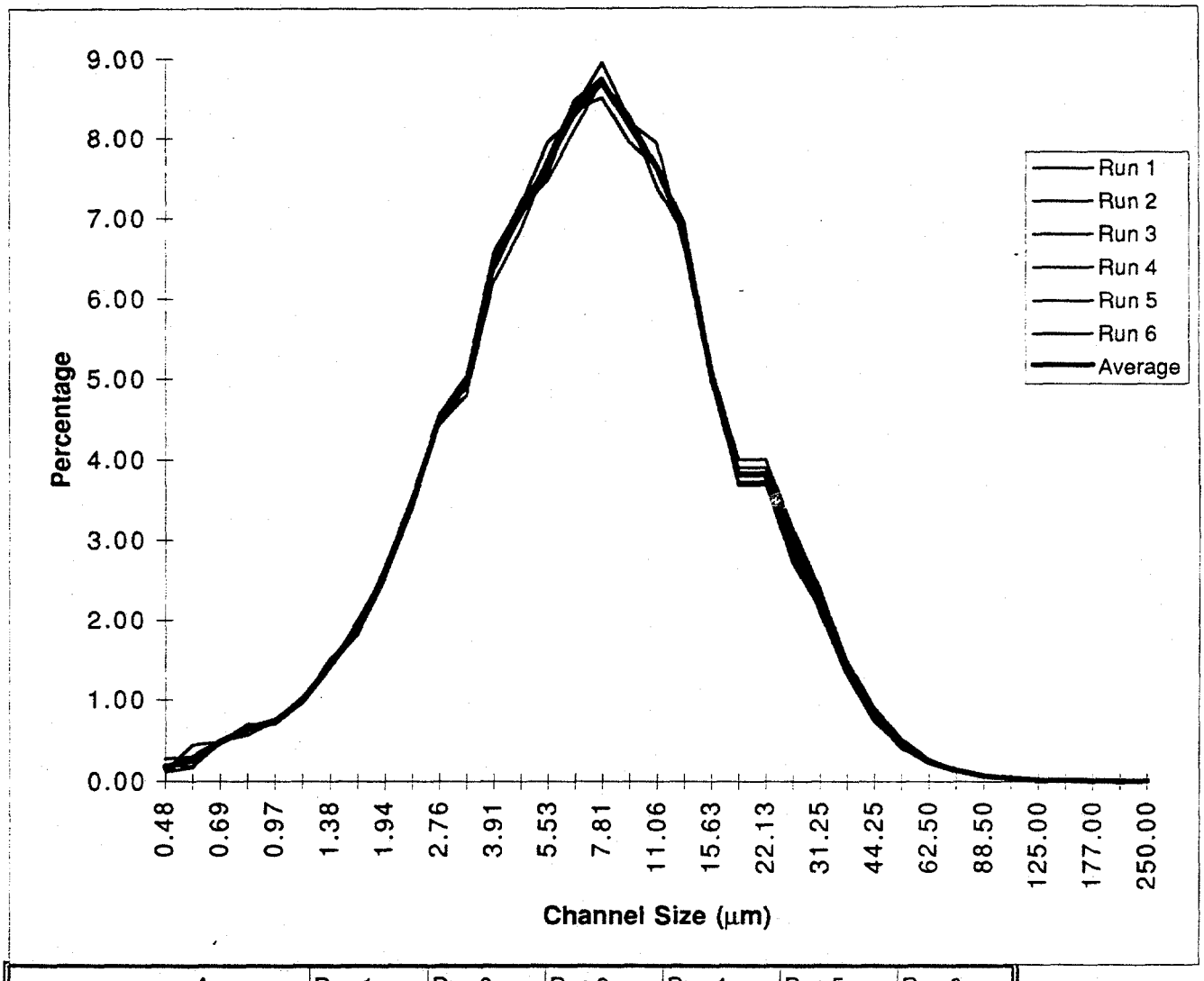
LRC ID AB00095

Particle Size Analysis Results
University of Minnesota Limnological Research Center
External Services Organization

Sample: AB00121 Client: Northeast Analytical/O'Brien&Gere Engineers, Inc.

Processing: >15 minutes wrist-action shaker in 0.25% Calgon followed by 45 seconds ultrasonication.

Other Comments:



	Average	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6
Date		01/30/98	01/30/98	01/30/98	01/30/98	01/30/98	01/30/98
Time		17:05:44	17:06:36	17:07:30	17:08:22	17:09:16	17:10:08
Mean (µ)	10.12	9.98	9.98	10.04	10.10	10.33	10.28
Med. (µ)	7.59	7.53	7.52	7.55	7.59	7.68	7.69
StdDev (µ)	9.39	9.06	9.37	9.34	9.30	9.57	9.70
Skew.	0.27	0.27	0.26	0.27	0.27	0.28	0.27
Kurt.	53.23	36.94	68.08	58.39	46.84	39.46	69.68
C. of Var.	92.79	90.79	93.91	93.01	92.07	92.56	94.39
Counts	10251.54	10385	10256	10224	10244	10206	10194

LRC ID AB00121

Sample: AB00121

Particle size distributions in percent per size channel

Diameter (µm)	Average	Run 1 01/30/98 17:05:44	Run 2 01/30/98 17:06:36	Run 3 01/30/98 17:07:30	Run 4 01/30/98 17:08:22	Run 5 01/30/98 17:09:16	Run 6 01/30/98 17:10:08
0.48	0.16	0.12	0.17	0.11	0.11	0.27	0.20
0.58	0.27	0.28	0.23	0.16	0.44	0.30	0.18
0.69	0.48	0.47	0.47	0.46	0.47	0.50	0.50
0.83	0.63	0.66	0.66	0.66	0.68	0.55	0.58
0.97	0.72	0.70	0.75	0.73	0.71	0.74	0.73
1.16	0.98	0.95	0.96	0.99	1.02	1.02	0.96
1.38	1.42	1.41	1.42	1.40	1.39	1.41	1.50
1.66	1.89	1.89	1.91	1.98	1.92	1.82	1.81
1.94	2.56	2.56	2.64	2.59	2.52	2.51	2.53
2.33	3.47	3.39	3.52	3.52	3.49	3.50	3.38
2.76	4.49	4.49	4.55	4.52	4.51	4.42	4.47
3.28	4.93	5.02	5.02	5.03	4.93	4.79	4.79
3.91	6.42	6.57	6.51	6.42	6.34	6.20	6.49
4.66	7.05	7.14	7.19	7.01	7.02	6.85	7.10
5.53	7.66	7.95	7.61	7.75	7.55	7.67	7.46
6.56	8.33	8.27	8.37	8.47	8.41	8.34	8.11
7.81	8.71	8.71	8.94	8.75	8.66	8.50	8.71
9.31	8.16	8.20	8.25	8.16	8.14	7.95	8.28
11.06	7.62	7.93	7.38	7.58	7.59	7.62	7.64
13.13	6.84	6.63	6.79	6.87	6.91	6.95	6.88
15.63	5.07	4.95	5.07	5.05	5.09	5.14	5.12
18.63	3.80	3.72	3.69	3.67	3.84	3.99	3.89
22.13	3.80	3.72	3.69	3.67	3.84	3.99	3.89
26.25	2.91	2.95	2.71	2.77	2.85	3.15	3.05
31.25	2.23	2.09	2.14	2.27	2.19	2.39	2.31
37.25	1.41	1.31	1.36	1.41	1.46	1.48	1.45
44.25	0.81	0.73	0.78	0.78	0.82	0.90	0.86
52.50	0.45	0.43	0.41	0.41	0.46	0.52	0.48
62.50	0.24	0.23	0.23	0.22	0.23	0.27	0.25
74.50	0.13	0.13	0.13	0.12	0.12	0.14	0.14
88.50	0.06	0.06	0.06	0.05	0.06	0.07	0.07
105.00	0.03	0.03	0.03	0.03	0.03	0.03	0.04
125.00	0.02	0.01	0.02	0.02	0.02	0.02	0.02
149.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
177.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00
210.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
250.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00

Analyst: Dr. Brian Haskell
Report Date: Feb. 2,1998

LRC ID AB00121

NORTHEAST ANALYTICAL, INC.

301 Nott Street, Schenectady, N.Y. 12305
(518)346-4592 Fax (518)381-6055

CHAIN OF CUSTODY RECORD

CLIENT: NorthEast Analytical, Inc. | PROJECT#/PROJECT NAME: 612.245.518

CLIENT CONTACT: Robert Sirkl | LOCATION (CITY/STATE) ADDRESS: GE Hudson Falls

DUE DATE: PHONE#: 346-4592

REQUIRED TURN AROUND TIME:

SAMPLE ID	DATE	TIME	MATRIX	GRAB/COMP	NEA USE ONLY	# OF CONTAINERS	1	2	3	4	5	6	7	REMARKS
Shook Kill - 1	1/10/98	0015	Water	Comp	AB00092	1	X							
MosesCr	1/10/98	0025	Water	Grab	AB00095	1	X							
Shook Kill-2	1/10/98	0510	Water	Comp	AB00098	1	X							
MosesCr	1/10/98	0500	Water	Comp	AB00099	1	X							
HRM 194.2W-S	1/10/98	10:20	Water	Comp	AB00117	1	X							
HRM 194.2E-S	1/10/98	10:20	Water	Comp	AB00118	1	X							
HRM 192.5W-S	1/10/98	11:25	Water	Grab	AB00119	1	X							
HRM 188.5E-S	1/10/98	11:15	Water	Grab	AB00120	1	X							
SCH-S	1/10/98	11:45	Water	Comp	AB00121	1	X							
MosesCr	1/10/98	11:00	Water	Grab	AB00129	1	X							
Shook Kill	1/10/98	10:50	~~Grab~~W	Grab	AB00130	1	X							

PARAMETER AND METHOD	SAMPLE BOTTLE: TYPE	SIZE	PRES.
1 Grain Size			
2			
3			
4			
5			
6			
7			

NOTE: THE NUMBERED COLUMNS ABOVE CROSS REFERENCE THE NUMBERED COLUMNS FROM TOP RIGHT OF SHEET

SAMPLED BY (PRINT):

COMPANY:

NAME OF COURIER (IF USED): fedEx

RELINQUISHED BY:

DATE: 1/11/98 TIME: 3:15

RECEIVED BY:

DATE: TIME:

RELINQUISHED BY:

DATE: TIME:

RECEIVED BY:

DATE: TIME:

RELINQUISHED BY:

DATE: TIME:

RECEIVED BY:

DATE: TIME:

AMBIENT OR CHILLED TEMP _____

PROPERLY PRESERVED: Y N NOTE:

COC TAPE Y N NOTE:

RECEIVED BROKEN OR LEAKING YES NO NOTE:

RCVD W/I HOLDING TIMES: Y N NOTE:

COC DISCREPANCIES Y N NOTE:

311076

WHITE COPY TO LABORATORY YELLOW COPY TO GENERATOR PINK COPY TO SAMPLER

Computer output gives the following data (normally in rows, not columns), with some examples:

Date	8/13/96	
Time	17:15:38	
ID Code	FS_6_20	
Material	River Sed	
Operator	BJH	
Standard File		usually blank
Stir Speed	0	
Concentration		usually blank
Signal Str.	208	
Focus Depth	2.83	
Dispersant	Calgon 0.25%	
Additives	H202	
C.toAvg.	5	Number of cycles averaged
Update Time	1	Cycle duration

38 rows showing the distribution data in the following size catagories (micron): 0.4, 0.4844, 0.5781, 0.6875, 0.8281, 0.9688, 1.156, 1.375, 1.656, 1.938, 2.328, 2.757, 3.281, 3.906, 4.656, 5.531, 6.563, 7.813, 9.313, 11.06, 13.13, 15.63, 18.63, 22.13, 26.25, 31.25, 37.25, 44.25, 52.5, 62.5, 74.5, 88.5, 105, 125, 149, 177, 210, 250,

Mean (µm)	
Med. (µm)	
StdDev (µm)	
Skew., Kurt.	
C. of Var.	
Counts	Total counts in sample (a function of concentration and scanning time).

NORTHEAST ANALYTICAL

ENVIRONMENTAL LAB SERVICES

301 Nott Street, Schenectady, NY 12305
(518) 346-4592 • FAX (518) 381-6055

CERTIFICATE OF ANALYSIS
2/4/98

O'BRIEN & GERE ENGINEERS
5000 BRITTONFIELD PARKWAY
PO BOX 4873
SYRACUSE, NY 13221
CONTACT: WILLIAM AYLING

MATRIX :	WATER	**DATE SAMPLED:**	1/10/98
DATE RECEIVED:	1/10/98 **TIME:** 17:05	**PROJECT:**	612.245.518
SAMPLED BY:	W. AYLING	**LOCATION:**	HUDSON RIVER-WCM HIGH FLOW
CUSTOMER PO:	N/A	**LAB ELAP #:**	11078

NEA ID:	CUSTOMER ID :	METHOD:	RESULTS	PQL	UNITS	DATE TESTED
AB00092	SHOOK KILL-1	Total Organic Carbon	17000	2200	mg/kg	2/3/98
AB00095	MOSES CR	Total Organic Carbon	7600	2000	mg/kg	2/3/98
AB00098	SHOOK KILL-2	Total Organic Carbon	17000	2700	mg/kg	2/3/98
AB00099	MOSES CR	Total Organic Carbon	13000	2400	mg/kg	2/3/98
AB00117	HRM 194.2W-5	Total Organic Carbon	72000	4000	mg/kg	2/4/98
AB00118	HRM 194.2E-5	Total Organic Carbon	52000	4400	mg/kg	2/4/98
AB00119	HRM 188.5W-5	Total Organic Carbon	29000	3400	mg/kg	2/3/98
AB00120	HRM 188.5E-5	Total Organic Carbon	56000	4700	mg/kg	2/4/98
AB00121	SCH-5	Total Organic Carbon	73000	6800	mg/kg	2/4/98
AB00129	MOSES CR	Total Organic Carbon	7900	2000	mg/kg	2/3/98
AB00130	SHOOK KILL-5	Total Organic Carbon	24000	3000	mg/kg	2/3/98

Note: ND (Not Detected) Denotes analyte not detected at a concentration greater than the PQL
PQL (Practical Quantitation Limit) Denotes lowest analyte concentration reportable for the sample

AUTHORIZED SIGNATURE: _____

heast Analytical, Inc.
ert E. Wagner, Laboratory Director

NY STATE DEPARTMENT OF HEALTH CERTIFIED LAB

311078

NORTHEAST ANALYTICAL, INC.

301 Nott Street, Schenectady, N.Y. 12305
(518)346-4592 Fax (518)381-6055

CHAIN OF CUSTODY RECORD

CLIENT: NorthEast Analytical, Inc.
PROJECT#/PROJECT NAME: 612.245.518
CLIENT CONTACT: Robert Stull
LOCATION (CITY/STATE) ADDRESS: GE Hudson Falls
DUE DATE: PHONE#: 346-4592
REQUIRED TURN AROUND TIME:

SAMPLE ID	DATE	TIME	MATRIX	GRAB/COMP	NEA USE ONLY	# OF CONTAINERS	1	2	3	4	5	6	7	REMARKS
ShookKill-1	1/10/98	0015	Water	Comp	AB00092	1	X	X						
MosesCr	1/10/98	0025	Water	Grab	AB00095	1	X	X						
ShookKill-2	1/10/98	0510	Water	Comp	AB00098	1	X	X						
MosesCr	1/10/98	0500	Water	Comp	AB00099	1	X	X						
HRM 194.2W-S	1/10/98	10:20	Water	Comp	AB00117	1	X	X						
HRM 194.2E-S	1/10/98	10:20	Water	Comp	AB00118	1	X	X						
HRM 188.5W-S	1/10/98	11:25	Water	Grab	AB00119	1	X	X						
HRM 188.5E-S	1/10/98	11:15	Water	Grab	AB00120	1	X	X						
SCH-S	1/10/98	11:45	Water	Comp	AB00121	1	X	X						
MosesCr	1/10/98	11:00	Water	Grab	AB00129	1	X	X						
ShookKill	1/10/98	10:50	~~Grab~~W	Grab	AB00130	1	X	X						

PARAMETER AND METHOD	SAMPLE BOTTLE: TYPE	SIZE	PRES.
1 Grain Size			
2 TOC			
3			
4			
5			
6			
7			

NOTE: THE NUMBERED COLUMNS ABOVE CROSS REFERENCE THE NUMBERED COLUMNS FROM TOP RIGHT OF SHEET

SAMPLED BY (PRINT):
COMPANY:
NAME OF COURIER (IF USED): fedEx

RELINQUISHED BY: [signature]
DATE: 1/19/98 TIME: 3:15
RECEIVED BY:
DATE: TIME:

RELINQUISHED BY:
DATE: TIME:
RECEIVED BY:
DATE: TIME:

RELINQUISHED BY:
DATE: TIME:
RECEIVED BY:
DATE: TIME:

AMBIENT OR CHILLED TEMP _____
PROPERLY PRESERVED: Y N NOTE:
COC TAPE Y N NOTE:
RECEIVED BROKEN OR LEAKING YES NO NOTE:
RCVD W/I HOLDING TIMES: Y N NOTE:
COC DISCREPANCIES Y N NOTE:

WHITE COPY TO LABORATORY YELLOW COPY TO GENERATOR PINK COPY TO SAMPLER

311079

APPENDIX G

Data validation summary

Appendix G. Data validation summary

The PCB analytical data (NEA 1990) generated for the January 1998 High Flow Monitoring Program were evaluated based on quality assurance/quality control (QA/QC) criteria established by the United States Environmental Protection Agency (USEPA), New York State Department of Environmental Conservation (NYSDEC), and criteria presented in the quality assurance project plan (QAPP; O'Brien & Gere 1992). Validation procedures were based on contract laboratory program (CLP) data validation guidelines developed by the USEPA. Minor deficiencies in the data generation process resulted in approximation (flagged with a "UJ" or "J") of sample data. Approximation of a data point indicates uncertainty in the reported concentration of the analyte, but not its assigned identity.

The conservative assumptions used in the development of conclusions made based on these analytical results allow for the quantitative use of approximated analytical data while still adhering to the project data quality objectives (DQOs) which are quantitative and qualitative statements specifying the quality of the environmental data required to support the decision making process. DQOs define the total uncertainty in the data that is acceptable. For this investigation, the DQOs require that the total uncertainty of the analytical data remain within an acceptable range so as not to hinder the intended use of the data. The data is intended to be used to support both qualitative and quantitative conclusions concerning the potential sources or migration pathways of PCBs at the site, to support engineering evaluations of potential remedial response activities, and to support the assessment environmental risks from PCBs.

This approach to the use of analytical data is consistent with the guidance presented in the USEPA *Human Health Evaluation Manual* (USEPA 1989). Specific QA/QC deviations that resulted in qualification of sample data are presented in the data validation technical memorandum (O'Brien &Gere 1999). Additional information on the impact of deviations from QC measurements on the analytical data was found in the *Guidance for Data Usability in Risk Assessment* (USEPA 1992). A summary of the results of the data validation process is presented in Table G-1 (O'Brien & Gere 1999).

The analytical data are summarized in terms of its usability for these site characterization purposes. The primary objective of the 1998 High Flow Monitoring Program was to evaluate the potential for pulsed loading of PCBs during a high flow event. Validation of the PCB data in this report

indicated that the DQOs defined in the QAPP were met. The adherence of the data to the precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters presented in the QAPP are summarized below.

Precision is measured through field duplicate samples. For this sampling program, field duplilcate analyses were within the expected ranges.

Accuracy of a compound measurement is indicated by recoveries of matrix, blank, and surrogate spikes, internal standard area performance, calibration, chromatographic resolution, compound quantitation, and compound identification criteria. For this sampling program, 10 environmental samples were qualified for chromatographic resolution deviations.

Representativeness of the analytical data is assessed by review of holding times, sample preservation, extraction procedures, and blank analyses. For this sampling program, none of the data were qualified for holding time deviations or blank contamination.

Comparability is not compromised provided that the analytical methods did not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Standard analytical methods, reporting procedures, and USEPA traceable standards were consistently used by NEA. In September 1997, the lab began using a revised Green Bay mixed Aroclor congener distribution standard. Data collected prior to September 1, 1997 were adjusted to match this analytical adjustment by using calibration correction factors. Therefore, comparability of data collected before and after September 1, 1997 is not compromised.

Completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Completeness or the percent usability of the data, for this investigation was 100%. The percent usability calculation did not include an assessment of QC samples (blind duplicate samples and equipment blanks) collected to aid in the evaluation of environmental sample data.

Overall, the analytical data are of sufficient quality to meet the project DQOs and may be used for qualitative and quantitative purposes. These uses include, but are not limited to, performance of human health and ecological risk assessments, evaluation of remedial alternatives, and estimation of the nature and extent of PCBs at the site.

In addition to qualifiers identified during data validation, the data were also reviewed for potential laboratory contamination of samples. Laboratory contamination with Aroclor 1260 was detected in wipe samples collected from laboratory equipment during October 1997. The laboratory reportedly discarded associated laboratory ware and cleaned laboratory surfaces. Detection of PCBs in an equipment blank collected for the Post-Construction Remnant Deposit Monitoring Program (PCRDMP) in October 1997 may also be associated with the laboratory contamination.

Additional sample results may be approximated due to this problem. Water column samples with heptachlorobiphenyls are uncharacteristic of data typically collected in upper Hudson River. Weight percent concentrations of heptachlorobiphenyl greater than 3 percent are likely due to the presence of Aroclor 1260 contamination. Detection of weight percent concentrations of heptachlorobiphenyl less than 3 percent may be due to environmental Aroclor 1254 in the river or Aroclor 1260 contamination. Due to the uncertainty associated with the laboratory contamination, samples containing detectable heptachlorobiphenyls were qualified as approximate as summarized in Table G-2.

References

Northeast Analytical, Inc. (NE) 1990. Method NEA-608CAP, Rev. 3.0, 6/90. (Includes guidelines set forth in *Quality Assurance Plan. Green Bay Mass Balance Study, I. PCBs and Dieldrin, U.S. EPA Great Lakes National Program Office.* Prepared by Deborah L. Swackhamer, Quality Assurance Coordinator, Field and Analytical Methods Committees, University of Minnesota, December 11, 1987 (Appendix F, bound separately).

O'Brien & Gere Engineers, Inc. (O'Brien & Gere). 1992. *Quality Assurance Project Plan Post Construction Monitoring Program, Fort Edward Dam PCB Remnant Deposit Containment*, Syracuse, New York: O'Brien & Gere Engineers, Inc., June 1992.

O'Brien & Gere Engineers, Inc. (O'Brien & Gere). 1999a. *1998 High Flow Monitoring Program Data Summary Report.* Syracuse, New York: O'Brien & Gere Engineers, Inc., April 1999.

O'Brien & Gere Engineers, Inc. (O'Brien & Gere). 1999b. *Hudson River PCB Monitoring Programs - 1997 High Flow and Suspended Solids Monitoring Program, 1997 Thompson Island Pool Studies, and 1998 High Flow Event Monitoring Program. Data Validation Technical Memorandum.* Syracuse, New York: O'Brien & Gere Engineers, Inc., April 1999.

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Table G-1. *Data validation results.*

Date Collected	Field ID	Lab ID	PCB (ng/l)	Qualifier	Section Reference	Deviation
1/9/98	EQBL KEM96A	AB00122	<11	UJ	4.1.5	surrogate recovery
1/9/98	EQBL KEM95	AB00116	<11	UJ	4.1.2	chromatographic resolution
1/9/98	EQBL KEM96A	AB00122	<11	UJ	4.1.2	chromatographic resolution
1/10/98	HRM 194.2W-5	AB00117	43	J	4.1.2	chromatographic resolution
1/10/98	HRM 194.2E-5	AB00118	77	J	4.1.2	chromatographic resolution
1/10/98	HRM 188.5W-5	AB00119	204	J	4.1.2	chromatographic resolution
1/10/98	HRM 188.5E-5	AB00120	192	J	4.1.2	chromatographic resolution
1/10/98	SCH-5	AB00121	310	J	4.1.2	chromatographic resolution
1/10/98	HRM 194.2W-6	AB00123	137	J	4.1.2	chromatographic resolution
1/10/98	HRM 194.2E-6	AB00124	49	J	4.1.2	chromatographic resolution
1/10/98	HRM 188.5W-6	AB00125	192	J	4.1.2	chromatographic resolution
1/10/98	HRM 188.5E-6	AB00126	230	J	4.1.2	chromatographic resolution
1/10/98	SCH-6	AB00127	340	J	4.1.2	chromatographic resolution
1/11/98	EQBL HRM 194.2	AB00137	<11	UJ	4.1.5	surrogate recovery

Source: O'Brien & Gere Engineers, Inc. 1999. Hudson River PCB Monitoring Programs-1997 High Flow and Suspended Solids Monitoring Program, 1997 Thompson Island Pool Studies, and 1998 High Flow Event Monitoring Program: Data Validation Technical Memorandum. Syracuse, NY: O'Brien & Gere Engineers, Inc. April 1999.

Table G-2. *Water column samples containing heptachlorobiphenyl*

Date Collected	Field ID	Lab ID	PCB (ng/l)	Hepta-CB (wt%)	Qualifier
1/9/98	SCH-1	AB00096	253	0.9	J1
1/10/98	HRM 194.2E-5	AB00118	77	0.8	J1
1/10/98	HRM 194.2E-2	AB00100	190	1.8	J1
1/10/98	HRM 194.2E-3	AB00106	87	2.2	J1
1/10/98	HRM 194.2W-6	AB00123	137	0.4	J1
1/10/98	SCH-5	AB00121	311	0.3	J1
1/10/98	DUP-2	AB00115	286	0.5	J1
1/10/98	SCH-2	AB00102	517	0.5	J1
1/10/98	SCH-4	AB00114	293	1.0	J1
1/10/98	HRM 188.5E-6	AB00126	230	0.4	J1
1/10/98	HRM 188.5E-4	AB00113	210	1.3	J1
1/10/98	HRM 188.5W-2	AB00101	161	2.1	J1

Source: O'Brien & Gere Engineers, Inc.