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CONTRACT NO.: EP-S3-07-06
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DOCUMENT NO.: 3330-029-EO-CORR-01478
SUBJECT: Preliminary Phase 2 Groundwater Report
Borit Asbestos Superfund Site, Operable Unit 1, Ambler, PA
(DCN: 3330-029-RT-OTHR-01479)

Dear Ms. Matzko:

CDM Federal Programs Corporation (CDM) is pleased to submit this brief Preliminary Phase 2 Groundwater Report that presents data tables and figures summarizing only the results of the Operable Unit 1 (OU-1) Phase 2 field investigation for groundwater and dioxins in soil at the Borit Asbestos Site (the Site) in Ambler, PA. EPA authorized CDM to prepare this Preliminary Groundwater Report to support EPA's scoping process for additional groundwater field investigation at the Site. EPA has not yet authorized CDM's preparation of the remedial investigation (RI) report, the feasibility study (FS) report, the human health risk assessment (HHRA), or the screening level ecological risk assessment (SLERA) for this Site. CDM understands that these detailed reports will be prepared after all of the results from the Phase 2 field investigation are available. This Preliminary Phase 2 Groundwater Report was prepared under work assignment 029-RICO-A3EN of CDM's contract number EP-S3-07-06 with EPA Region 3.

If you have any questions or comments regarding this submittal, please feel free to call me at (717) 437-3701. We look forward to meeting with you at your earliest convenience to discuss the Phase 2 groundwater results and determine the approach for additional groundwater field investigation.

Very truly yours,

Lucinda J. Pye
Project Manager
CDM



cc: J. Tralie, EPA Project Officer (letter only)
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U.S. Environmental Protection
Agency Region III

**Borit Asbestos Superfund Site
Operable Unit 1
Ambler, Pennsylvania**

February 25, 2011

*Preliminary Phase 2
Groundwater Report*

**Response Action Contract
for Remedial Planning and Oversight Activities at Sites
in EPA Region III**

U.S. EPA Contract No. EP-S3-07-06

**Preliminary Phase 2 Groundwater Report
for
Borit Asbestos Superfund Site
Operable Unit 1
Ambler, Pennsylvania**

**Work Assignment No.: 029-RICO-A3EN
Document Control No.: 3330-029-RT-OTHR-01479**

February 25, 2011

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Section 1

Scope of the Phase 2 Field Investigation and Analysis

CDM Federal Programs Corporation (CDM) is performing a Remedial Investigation (RI) of the Borit Asbestos Superfund Site Operable Unit 1 (OU-1) in Ambler Pennsylvania under work assignment 029-RICO-A3EN of CDM's RAC 2 contract with EPA Region III (contract EP-S3-07-06). Phase 1 of the RI included an investigation of the nature and extent of soil, sediment, and surface water contamination and air monitoring at all three parcels. Phase 2 includes additional soil samples, activity-based sampling (ABS) (to be completed in 2011), a groundwater investigation, and ambient air monitoring at offsite locations. A Phase 1 data evaluation report submitted in 2010 summarizes Phase 1 field investigations and analytical data collected in late 2009 and early 2010. A Phase 2 data evaluation report will be submitted upon completion of Phase 2 field activities, including activity-based sampling (ABS) which is expected to be conducted in late spring or early summer 2011. EPA authorized CDM to prepare this preliminary Phase 2 groundwater report to support EPA's scoping process for any additional groundwater field investigations. Once remedial investigations have been completed, a RI Report summarizing all field phases will be prepared.

The scope of the Phase 2 field investigation activities was defined in the *Revised Final Borit Asbestos Superfund Site Phase 2 Field Investigation Planning Guide*, dated August 4, 2010 by CDM. Sampling activities were performed in accordance with the Final Site Management Plan (SMP) (*Final Site Management Plan for Remedial Investigation, Phase 2 Borit Asbestos Superfund Site, Operable Unit 1 Ambler, Pennsylvania, September 24, 2010* by CDM). Health and safety procedures were followed according to CDM's Health and Safety Plan in Appendix B of the SMP.

Phase 2 field investigation activities were conducted from October 4 through December 3. In addition on the 14 and 15 of each month starting in November ambient air sampling is conducted. This air sampling is ongoing. This report specifically describes the Phase 2 groundwater sampling and results; however, for clarity a complete list of the Phase 2 field components are provided:

- Surface soil samples (on August 17, 2010) collected from four locations (APSS-01, PKSS-01, PKSS-02, RVSS-01) along three parcels where surface runoff is believed to exit the Site between the fence line and the roadway were submitted for asbestos analysis;
- Surface soil samples were collected (on August 17, 2010) at the Park from six previously-sampled composite soil sample locations (PKSB-06, PKSB-08, PKSB-10, PKSB-12, PKSB-29 and PKSB-40) were submitted for asbestos analysis. These locations were sampled because asbestos levels greater than 12% were found in the cover waste interface layer;
- Surface soil samples were collected (on August 17, 2010) at the Park at five locations (CKSS-01 through CKSS-05) along the stream bank cap along Wissahickon Creek and Rose Valley Creek and were submitted for asbestos analysis;

- Surface soil samples collected (on October 4, 2010) at the nearby Kid's Park (KPSS-01A and KPSS-02A) and were submitted for asbestos analysis;
- A visual investigation (on October 5 and 6, 2010) along the banks of the Wissahickon near walking trails was performed to evaluate the extent of asbestos-containing material (ACM) washed downstream;
- Surface and subsurface soil samples collected (on October 7, 2010) at five locations at three distinct depth intervals (five from 0-3 inches, five from 0-6 inches, and five from 6-24 inches and one duplicate sample) at the former fire training area at the Asbestos Pile (APFT-SS01-A, APFT-SS01-B, APFT-SS01-C, APFT-SS01D-A, APFT-SS02-A, APFT-SS02-B, APFT-SS02-C, APFT-SS03-A, APFT-SS03-B, APFT-SS03-C, APFT-SS04-A, APFT-SS04-B, APFT-SS04-C, APFT-SS05-A, APFT-SS05-B, and APFT-SS05-C) were submitted for EPA Contract Laboratory Program (CLP) target compound list (TCL) semi-volatile organic compounds (SVOCs) and dioxin analyses;
- Surface and subsurface soil samples collected (on October 7, 2010) at two locations at three distinct depth intervals (two from 0 to 3 inches, two from 0 to 6 inches, and two from 6 to 24 inches) at the slag area at the Asbestos Pile (APSL-SS01-A, APSL-SS01-B, APSL-SS01-C, APSL-SS02-A, APSL-SS02-B, and APSL-SS02-C) were submitted for EPA CLP TCL SVOCs, and dioxins, CLP target analyte list (TAL) metals, and asbestos analyses;
- Seep water samples collected (on October 12, 2010) at one location on the Reservoir parcel (RV-SPSW-01 and a duplicate sample RV-SPSWD-01) were submitted for EPA CLP TCL volatile organic compounds (VOCs), SVOCs, polychlorinated biphenyls (PCBs), and pesticides, CLP TAL metals, and asbestos analyses;
- Surface soil samples collected (on October 12 and 13, 2010) from eight residential yards (RS01-ABSS-A, RS02-ABSS-A, RS03-ABSS-A, RS04-ABSS-A, RS05-ABSS-A, RS06-ABSS-A, RS07-ABSS-A, RS08-ABSS-A) were submitted for asbestos analysis. RS01 through RS05 were collected at properties along Maple Street, RS06 and RS07 were collected at properties along Mercer Hill Drive, and RS08 was collected from a property along Betsy Lane;
- ABS on the Park, Reservoir, Asbestos Pile, walking trails, and at select residential properties was not completed during the initial Phase 2 investigation in 2010 and is rescheduled for late spring or early summer 2011. One raking scenario was completed (on October 18, 2010) at the Park at Phase 1 location PKSB-10 and 1 adult sample (worn at the shoulder and labeled PK05-ABRK01-H), 1 child sample (worn at the hip and labeled PK05-ABRK02-H), and three perimeter air samples (PK05-PA01-H, PK05-PA02-H, and PK05-PA03-H) were submitted for asbestos analysis by TEM method ISO 10312;
- Surface soil samples collected (on October 18 and 19, 2010) from seven locations (PK-ABSS01-A (i.e. CKSB-07), PK-ABSS02-A (i.e. PKSS-01), PK-ABSS03-A (i.e. PKSB-06), PK-ABSS04-A (i.e. PKSB-08), PK-ABSS05-A (i.e. PKSB-10), PK-ABSS06-A (i.e. PKSB-40), and PK-ABSS07-A (i.e. CKSS-01)) at the Park parcel were submitted for asbestos analysis. Sample numbers shown in brackets are Phase 1 or early Phase 2 sample locations that were chosen for ABS due to elevated asbestos concentrations in surface soil;

- Site wide utility clearing (on October 19, 2010) of all proposed boring locations in the Park, Asbestos Pile and Reservoir berm (along roadway between Asbestos Pile and Reservoir) and floodplain areas;
- Subsurface soil sampling (on October 20 through November 1, 2010) was performed at each monitoring well location approximately 3 inches below the waste and native layer interface (PKMW01-SB12-12.25, PKMW02-SB22-22.25, RVMW03-SB2.25-2.5, APMW04-SB16-16.25, APMW05-SB18.5-18.75, APMW06-SB9.75-10) and samples were submitted for asbestos analysis;
- Monitoring wells were installed on all three parcels (on October 26 through November 11, 2010). Two monitoring wells (PKMW-01 and PKMW-02) were installed at the Park with PKMW-01 drilled deeper and renamed PKMW-01A, two monitoring wells (RVMW-03 and RVMW-04) were installed at the Reservoir, and two monitoring wells (APMW-05 and APMW-06) were installed at the Asbestos Pile.
- Groundwater samples were collected from all monitoring wells (November 8 through 15, 2010): 7 environmental and 1 duplicate groundwater sample were submitted for EPA CLP TCL VOCs, SVOCs, PCBs, and pesticides, CLP TAL metals, and asbestos analyses;
- A geotechnical investigation was performed to evaluate slope stability and settlement for use in the Feasibility Study (FS). Three geotechnical boreholes were drilled at the Park (on November 4 through 5, 2010) and six geotechnical boreholes were drilled at the Asbestos Pile (on November 8 through 10, 2010). Soil samples were submitted for the following analysis (quantity of samples submitted in parentheses): grain size (20), atterberg limits (20), percent moisture (20), specific gravity (9), shear strength (5), and consolidation (5);
- Piezometers were installed in three of the geotechnical boreholes (GT-6, GT-7, and GT-8) at the Asbestos Pile; and
- Hydrologic studies (comprehensive round of measurements at monitoring wells, piezometers and staff gauges) were conducted at the Site parcels, reservoir, and creeks. A partial round of measurements were collected in November during groundwater sampling prior to installing staff gauges and Phase 2 piezometers, and a full round was collected in January 2011).

The three Borit parcels and the nearby former Ambler Asbestos Superfund Site are shown on **Figure 1-1**.

Section 2

Phase 2 Field Investigation Summary

In this preliminary Phase 2 Report, only the soil sampling for dioxin analysis and the groundwater investigation are described. Although primarily a groundwater data report, the soil dioxin data from areas where burning has been documented or was potentially conducted, is reported as well. These dioxin data were not presented in the Phase 1 report, and dioxin may be determined by EPA to be a contaminant of concern at the Site. Presenting the data in this report provides EPA an opportunity to evaluate the need to collect additional groundwater samples near the former fire training and slag areas for dioxin analysis. A full description of other Phase 2 activities will be provided in the full Phase 2 Report to be prepared following ABS.

2.1 Dioxin Sampling

Following the Phase 1 Data Evaluation Report, EPA decided to analyze soil from the former fire training and slag areas at the Asbestos Pile for dioxins due to the burning which took place as part of the fire training activities and the unknown origin of the slag material. Both of these areas are located in the northeastern corner of the Asbestos Pile near the Maple Street gate.

Surface and subsurface soil samples were collected at five locations at three distinct depth intervals (five from 0 to 3 inches, five from 0 to 6 inches, and five from 6 to 24 inches and one duplicate sample) at the former fire training area at the Asbestos Pile. Samples from each depth interval were submitted for dioxin analysis as well as other analysis noted in Section 1.

Surface and subsurface soil samples were collected at two locations at three distinct depth intervals (two from 0 to 3 inches, two from 0 to 6 inches, and two from 6 to 24 inches) at the slag area at the Asbestos Pile. Samples from each depth interval were submitted for dioxin analysis as well as other analysis noted in Section 1.

The 0 to 3 inch samples, designated as "A", were collected for use in the human health risk assessment and the 0 to 6 inch samples, designated as "B" and 6 to 24 inch samples, designated as "C" were collected for use in the ecological risk assessment. A figure depicting where these samples were collected is shown on **Figure 2-1**. A table showing sampling depths, environmental samples collected, and observations is included in **Appendix A**.

In accordance with the Final SMP, a duplicate soil sample and an aqueous rinsate blank were collected during dioxin sampling.

2.2 Bedrock Well Installation

CDM oversaw bedrock drilling at the Site. Two bedrock wells were drilled and installed at each of the three Site parcels.

- MW-01 was installed in the northern side of the Park, along the access road. This well was initially drilled to 53 feet; however, during development elevated conductivity and

pH indicated that the well was likely impacted by the bentonite/cement grout used as a seal above the bentonite plug. It is believed that the fractured rock allowed the grout to travel through the fractures and back into the well screen. The conductivity and the pH at the well were elevated enforcing this theory. CDM had several telephone calls with EPA discussing the situation and a conclusion was made to overdrill MW-01 and try to remove the bentonite grout and install a water producing well. MW-01 was re-drilled to a depth of 73 feet and is referred to as MW-01A. Prior to redrilling MW-01 a groundwater sample was collected and analyzed.

- MW-02 was installed along the access road adjacent to the Wissahickon Creek on the southern side of the Site to a depth of 63 feet.
- MW-03 was installed in the floodplain between the Reservoir berm and Rose Valley Creek to a depth of 53 feet.
- MW-04 was installed along the access road between the Asbestos Pile and Reservoir to a depth of 100 feet.
- MW-05 was installed in the southwestern corner of the Asbestos Pile near APPZ-02 and APPZ-03 to a depth of 64 feet.
- MW-06 was installed in the northeastern corner of the Asbestos Pile site near the intersection of Maple Street and Tannery Run. MW-6 was installed to a depth of 53 feet.

All bedrock monitoring wells were subsequently developed. CDM acquired approval from EPA's hydrogeologist for the Site to perform sampling 72 hours following the completion of monitoring well development. Bedrock monitoring well locations are presented on **Figure 2-1**. **Table 2-1** provides a list of monitoring wells and piezometers installed during Phase 2 and their well construction information. Piezometers were not sampled during Phase 2 and were installed to obtain more thorough water level elevations across the Asbestos Pile for the geotechnical investigation. This investigation as well as other investigations noted in Section 1 will be discussed during the Phase 2 Data Evaluation Report. Boring and well construction logs for the bedrock wells are included in **Appendix A**.

Personal air samplers, which were worn at all times by all CDM and subcontractor personnel within the exclusion zone during intrusive activities, were collected and submitted for laboratory analysis daily. Perimeter air samples were collected daily during intrusive activities and submitted for analysis the first two days of intrusive work at each parcel. These results will be included in the Phase 2 Data Evaluation Report.

2.3 Bedrock Well Groundwater Sampling

Between November 8 and November 15, 2010 all six bedrock groundwater wells were sampled (MW-01 through MW-06), with MW-01 being sampled twice once at its original shallower depth and once at the final depth, relabeled MW-01A. All bedrock monitoring wells and Phase 1 piezometers were gauged for water levels prior to groundwater sampling. Phase 2 piezometers and staff gauges were not completely installed during the groundwater sampling event in November and therefore were not gauged at that time. Groundwater sampling was conducted according to CDM's Final SMP. A clean Grundfos pump and dedicated tubing were lowered to midway along the well screen and samples were collected after three well volumes were purged and groundwater quality parameters were stabilized. The exception was at MW-01 where the well continued to purge dry and a sample was collected prior to three well

volumes purged. MW-01 was later redrilled and labeled MW-01A. Water quality parameters were collected at each location and final water quality parameters at each well are presented on Table 2-1. Samples were submitted, and analyzed for EPA CLP TCL VOCs, SVOCs, PCBs, and pesticides, CLP TAL metals, and asbestos analyses. Aqueous investigative-derived waste (IDW) was placed in a water tank located at the Site. Disposable materials used to sample each well were double bagged and placed into a roll-off for disposal at an asbestos landfill.

In accordance with the Final SMP, a duplicate water sample was collected for all parameters, except asbestos (discussed in Section 3.4), four aqueous field blanks and 1 aqueous rinsate blank were collected for all parameters. In addition four trip blanks were submitted with VOC shipments and analyzed for VOCs.

2.4 January 2011 Water Level Elevation Survey

In January 2011, CDM staff performed a water level elevation survey across the Site measuring water levels in bedrock wells, overburden piezometers, and staff gauges. Figure 2-2 presents the groundwater and surface water elevations and potentiometric lines. Down hole equipment was decontaminated between holes in accordance with CDM's Final SMP. Overburden piezometer well construction logs GT-06, GT-07, and GT-08 are included in Appendix A. Geotechnical boring logs and a description of the geotechnical investigation will be included in the Phase 2 Data Evaluation Report.

Section 3

Phase 2 Analytical and Hydrological Study Results

3.1 Dioxins in Soil Summary

As part of the Phase 2 field investigation, soil samples were collected at three different depths at seven locations total at the Asbestos Pile. Five locations were collected in the former fire training area and three locations were collected in the slag area. Dioxin total toxic equivalent (TEQ) values exceeding the RSL for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) (4.5 nanograms per kilogram (ng/kg)) are reported on **Figure 3-1**. All results are reported on **Table 3-1 and 3-2**. Dioxin total TEQ values ranged from 2.73 to 46.15 ng/kg also known as parts per trillion (ppt). Twenty samples out of 22 sample results (91%) exceeded the RSL for 2,3,7,8 TCDD. The rinsate blank for dioxins is reported on **Table 3-2**. Data quality will be discussed in the RI Report.

3.2 Groundwater Summary

The groundwater analytical results are presented in this section along with a description for the groundwater potentiometric surface and groundwater flow.

3.2.1 Analytical Results

As part of the Phase 2 field investigation, groundwater samples were collected from all six bedrock wells, with MW-01 being sampled twice, once at its shallower depth of 53 feet and once at its final depth of 73 feet. All groundwater analytical data were compared to RSLs and, in the case of asbestos the MCL. RSLs are provided by Oak Ridge National Laboratory (ORNL) and last updated in November 2010. Groundwater non-carcinogen RSLs were adjusted to a hazard quotient of 0.1 to account for any additive effects.

Groundwater compounds exceeding RSLs are summarized below and reported on **Figure 3-2**. Summary tables showing whether groundwater sampled at each monitoring well during Phase 2 exceeds RSLs for organics and inorganics and MCL for asbestos are presented on **Tables 3-3 through 3-8**.

Both filtered and unfiltered samples were collected for analysis of inorganic constituents (metals). Analysis of filtered samples provide the concentration of dissolved constituents and analysis of unfiltered samples provide the total (dissolved and undissolved) concentration of the constituent. Only dissolved inorganics (metals) concentrations are reported on the figure; however, for completeness total inorganics concentrations exceeding RSLs are included in the list below. No samples had asbestos results exceeding the MCL, and only one well (MW-04, unfiltered) had a detected level of asbestos, 0.51 million fibers per liter (MFL) versus the MCL which is 7 MFL.

- Carbon tetrachloride was detected above the RSL in one well (MW-02);
- Tetrachloroethene was detected above the RSL in one well (MW-02);

- Bis (2-ethylhexyl)phthalate was detected above the RSL in three wells (MW-02, 05 and 06);
- Vanadium was detected above the RSL in one well (MW-02);
- Arsenic was detected above the RSL in three wells (MW-03, 05 and 06);
- Manganese was detected above the RSL in four wells (MW-03, 04, 05 and 06).

It should be noted that bis(2-ethylhexyl)phthalate was detected above the RSL in the field blank, therefore the presence of this compound in groundwater samples may not be due to Site contaminants. This will be further evaluated in the RI Report. Mercury was also detected slightly above the RSL in three samples; however because it was detected in the rinsate blank all values are flagged "B" indicating that the analyte was not detected substantially above the level reported in laboratory or field blanks. Methylene chloride was detected in all samples including field blanks, trip blanks, and a rinsate blank; therefore, all results are flagged "B", same definition as described previously. All quality assurance (QA) samples are reported on **Tables 3-3 through 3-8**. Data quality will be discussed in the RI Report.

3.2.2 Groundwater Occurrence and Potentiometric Surface

The shallow groundwater potentiometric surface mapped from water levels collected in January 2011 is shown in **Figure 2-2**. Generally, the shallow groundwater is found in the fractured upper bedrock, and discontinuous occurrences of groundwater are found in the overburden material near the Wissahickon Creek. Based on the horizontal gradient, shallow groundwater flows from north to south across the Park Parcel, discharging to Wissahickon Creek. Locally, gradients indicate a component of site groundwater may be discharging to Rose Valley Creek as well. However, groundwater and surface water levels at Tannery Run suggest groundwater does not discharge to this creek.

As indicated by the elevations of the potentiometric surface in PKPZ-02 (overburden piezometer) and MW-02 (bedrock well), the vertical hydraulic gradient is downward and therefore, flow would be expected to be from the overburden into the fractured upper bedrock. Similarly, groundwater found within the unconsolidated material of the Asbestos Pile is discontinuous and may be described as perched water. If a pathway exists, this water would be expected to flow downward into the fractured upper bedrock.

3.3 Quality Control Summary

Soil and groundwater samples were collected in accordance with procedures specified in the SMP. Quality control samples were collected and tracked as part of the Phase 2 field investigation and will be discussed in detail in the Remedial Investigation Report for OU-1. All data quality objective (DQO)-definitive data collected during Phase 2 was validated by EPA Region III Environmental Services Assistance Team (ESAT) using EPA Contract Laboratory Program (CLP) data validation procedures. The inorganic analytical data validation was performed according to Region III Modifications to the National Functional Guidelines for Inorganic Data Review, Level IM2. The organic analytical data validation was performed according to Region III Modifications to the National Functional Guidelines for Low Concentration Organic Data Review, Level M3. Definitions for the qualifier flags used by ESAT to qualify the data are provided as footnotes on Tables. A full discussion of validation results will be included in the RI Report for OU-1.

3.4 Deviations from the SMP

Per the EPA Work Assignment Manager (WAM), on October 7, no further duplicates for asbestos for any media were collected.

All other deviations from the SMP, related to other Phase 2 field activities will be discussed in the Phase 2 Data Evaluation Report.

Section 4

Recommendations for Additional Field Investigation

At the request of the EPA WAM, CDM is not including any recommendations for additional field investigations at this time.

Tables

Table 2-1
Summary of Monitoring Well and Piezometer Installations
Borit Asbestos Superfund Site, OU-1
Preliminary Groundwater Report - Phase 2 Remedial Investigation

Location	Well ID	Depth (feet bgs)	Total Depth (feet bgs)
Park	MW-01A	Cement/Bentonite Grout: 0 - 55 Bentonite Seal: 55 - 60 Sand Pack: 60 - 73 Screen Interval: 63 - 73	73
	MW-02	Cement/Bentonite Grout: 0 - 49 Bentonite Seal: 49 - 51 Sand Pack: 51 - 63 Screen Interval: 53 - 63	63
Reservoir	MW-03	Cement/Bentonite Grout: 0 - 39 Bentonite Seal: 39 - 41 Sand Pack: 41 - 53 Screen Interval: 43 - 53	53
	MW--04	Cement/Bentonite Grout: 0 - 76 Bentonite Seal: 76 - 78 Sand Pack: 78 - 100 Screen Interval: 80 - 100	100
Asbestos Pile	MW-05	Cement/Bentonite Grout: 0 - 50 Bentonite Seal: 50 - 52 Sand Pack: 52 - 64 Screen Interval: 54 - 64	64
	MW-06	Cement/Bentonite Grout: 0 - 39 Bentonite Seal: 39 - 41 Sand Pack: 41 - 53 Screen Interval: 43 - 53	53
	GT-06	Cement/Bentonite Grout: 0 - 26 No 00 Sand Seal: 26 - 28 Sand Pack: 28 - 40 Screen Interval: 30 - 40	40
	GT-07	Cement/Bentonite Grout: 0 - 10 No 00 Sand Seal: 10 - 12 Sand Pack: 12 - 24 Screen Interval: 14 - 24	24
	GT-08	Cement/Bentonite Grout: 0 - 18 No 00 Sand Seal: 18 - 20 Sand Pack: 20 - 30 Screen Interval: 20 - 30	30

Notes and Abbreviations:

bgs: below ground surface

MW-01 was drilled deeper at the same location and MW-01A was installed

GT = Geotechnical

MW = Monitoring Well

Table 2-2
Water Quality Parameters
BoRit Asbestos Superfund Site, OU-1
Preliminary Groundwater Report - Phase 2 Remedial Investigation

Point ID	Date	Purge Method	Final pH SU	Final Temperature °C	Final Specific Conductivity mS/cm	Final Turbidity NTU	Initial Static WL ft	STATIC WL DATE	Comments
Development Final Reading									
MW-01	11/4/2010	Surge and pump	13.6	12.51	6.98	332	14.94	11/8/10	Well over-drilled and replaced by MW-01A.
MW-01A	11/11/2010	Surge and pump	7.5	12.79	0.424	838	NM	NA	
MW-02	11/3/2010	Surge and pump	7.23	12.85	0.73	0.5	22.44	11/8/10	
MW-03	11/3/2010	Surge and pump	8.02	13.17	0.729	7.6	5.44	11/8/10	
MW-04	11/4/2010	Surge and pump	10.89	13.73	0.574	235	20.42	11/8/10	
MW-05	11/4/2010	Surge and pump	9.55	12.74	0.786	57.2	14.06	11/8/10	
MW-06	11/5/2010	Surge and pump	7.47	14.07	0.818	5.7	11.06	11/8/10	
Groundwater Sampling Final Reading									
MW-01	11/10/2010	Grundfos pump	12.33	14.97	OOR	412	12.97	11/9/2010	PVC not yet cut, sticking up ~ 1.5 feet.
MW-01A	11/15/2010	Grundfos pump	6.89	14.9	0.465	25.9	13.84	11/15/2010	
MW-02	11/9/2010	Grundfos pump	7.27	14.3	0.744	24.2	22.66	11/9/2010	
MW-03	11/8/2010	Grundfos pump	6.97	13.9	0.94	0	5.64	11/8/2010	
MW-04	11/9/2010	Grundfos pump	7.78	14.67	0.531	130	14.61	11/9/2010	
MW-05	11/9/2010	Grundfos pump	7.57	15.35	0.81	4.1	20.51	11/9/2010	
MW-06	11/10/2010	Grundfos pump	7.46	15.18	0.776	5.5	12.38	11/10/2010	

Notes:

Depths are measured in feet

OOR = out of range of instrument

WL = water level

MW = monitoring well

mS/cm = millisemens per centimeter

pH SU = phelometric standard unit

°C = degrees celcius

ft = feet below top of PVC

NM = not measured

NA = not applicable

NTU = Nephelometric Turbidity Unit

Table 3-1
Dioxins in Soil
BoRit Asbestos Superfund Site, OU-1
Preliminary Groundwater Report - Phase 2 Remedial Investigation

Sample Location Sample Date Sample Time Analyte/TEF	APFT-SS01-A 10/07/2010 11:34		APFT-SS01D-A 10/07/2010 11:34		APFT-SS01-B 10/07/2010 11:49		APFT-SS01-C 10/07/2010 11:52		APFT-SS02-A 10/07/2010 12:12		APFT-SS02-B 10/07/2010 12:24		APFT-SS02-C 10/07/2010 12:40		APFT-SS03-A 10/07/2010 14:33		APFT-SS03-B 10/07/2010 14:41		APFT-SS03-C 10/07/2010 14:53		APFT-SS04-A 10/07/2010 15:16	
	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ
2378-TCDD (1.0)	1.84	1.84	0.56 J	0.56		0	0.32 J	0.32	1.05 J	1.05	0.67 J	0.67	2.05 J	2.05	0.27 J	0.27	0.22 J	0.22	0.72 J	0.72	0.28 J	0.28
2378-TCDF (0.1)	3.23 J	0.323	2.54	0.254	1.7 J	0.17	0.82 J	0.082	3.84 J	0.384	1.56 J	0.156	3.04 J	0.304	1.01	0.101	0.99 J	0.099	1.26 J	0.126	1.05	0.105
12378-PeCDF (0.03)	1.72 J	0.0516	1.67 J	0.0501	1.55 J	0.0465	0.5 B	0	2.22 J	0.0666	1.24 J	0.0372	1.05 B	0	1.23 J	0.0369	0.78 J	0.0234	0.94 B	0	0.68 J	0.0204
2378-PeCDD (1.0)	12.5	12.5	13.3	13.3	3.97 J	3.97	1.07 J	1.07	2.82 J	2.82	1.53 J	1.53	1.7 J	1.7	1.71 J	1.71	1.18 J	1.18	2.02 J	2.02	1.45 J	1.45
23478-PeCDF (0.30)	3.21 J	0.963	2.8 J	0.84	1.93 J	0.579	0.8 J	0.24	3.22 J	0.966	1.52 J	0.456	2.36 J	0.708	1.08 J	0.324	0.93 J	0.279	1.24 J	0.372	0.98 J	0.294
123478-HxCDF (0.10)	9.94	0.994	10.6	1.06	4.76 J	0.476		0	7.55	0.755	4.01 J	0.401	4.13 J	0.413	4.44 J	0.444	3.44 J	0.344	6.32 J	0.632	3.44 J	0.344
23678-HxCDF (0.10)	11.3	1.13	11.4	1.14	3.85 J	0.385	1.45 J	0.145	4.06 J	0.406	1.93 J	0.193	2.45 J	0.245	3.53 J	0.353	2.56 J	0.256	5.9	0.59	2.65 J	0.265
123478-HxCDD (0.10)	20.9	2.09	23	2.3	5.73 J	0.573	1.59 J	0.159	3.51 J	0.351	2.16 J	0.216	1.92 J	0.192	3.98 J	0.398	2.55 J	0.255	4.55 J	0.455	3.2 J	0.32
123678-HxCDD (0.10)	36.9	3.69	40.1	4.01	11.4	1.14	2.86 J	0.286	9.34	0.934	4.51 J	0.451	3.69 J	0.369	14.8	1.48	11.1	1.11	18.3	1.83	9.92	0.992
123789-HxCDD (0.10)	45.3	4.53	66.5	6.65	21.1 J	2.11	4.22 J	0.422	9.97	0.997	6.05 J	0.605	4.56 J	0.456	11.4	1.14	7.57	0.757	9.27 J	0.927	8.39	0.839
234678-HxCDF (0.10)	7.75	0.775	13.6	1.36	5.8	0.58	1.13 J	0.113	4.84 J	0.484	2.78 J	0.278	4.19 J	0.419	5.08	0.508	4.03 J	0.403	3.75 J	0.375	4.11 J	0.411
123789-HxCDF (0.10)	0.27 J	0.027	0.24 J	0.024		0		0	0.29 J	0.029		0	0.46 J	0.046	0.15 J	0.015	0.17 J	0.017		0		0
1234678-HpCDF (0.01)	147	1.47	156	1.56	65.4	0.654	16	0.16	52.3	0.523	26.2	0.262	26	0.26	127	1.27	105	1.05	208	2.08	83	0.83
1234678-HpCDD (0.01)	904	9.04	973	9.73	333	3.33	77.5	0.775	261	2.61	143	1.43	110	1.1	504	5.04	412	4.12	637	6.37	372	3.72
1234789-HpCDF (0.01)	7.59	0.0759	8.23	0.0823	3.29 J	0.0329	0.76 J	0.0076	3.42 J	0.0342		0	2.2 J	0.022	8.13	0.0813	6.65	0.0665	13.4	0.134	5.65	0.0565
12346789-OCDD (0.0003)	9910	2.973	10500	3.15	7940	2.382	3020	0.906	4340	1.302	2470	0.741	2100	0.63	7710	2.313	7130	2.139	8410	2.523	6840	2.052
12346789-OCDF (0.0003)	245	0.0735	273	0.0819	116	0.0348	20.4	0.00612	100	0.03	58.2	0.01746	54.5	0.01635	561	0.1683	528	0.1584	987	0.2961	335	0.1005
Total TEQ		42.546		46.1523		16.4632		4.69172		13.7418		7.44366		8.9305		15.653		12.4773		19.4501		12.0794

All results in nanograms per kilogram (ng/kg)
 Toxicity equivalents are based on 2005 World Health Organization scheme
 J - Analyte was positively identified, concentration is an estimated value
 B - Blank contamination
 TEQ - Toxicity equivalent quotient
 TEF - Toxic equivalency factor
Bolded - Total TEQ exceeded the Regional Screening Level of 4.5 ng/kg
 Blank result cell indicates that the result was not detected

Table 3-1
Dioxins in Soil
BoRit Asbestos Superfund Site, OU-1
Phase 2 Remedial Investigation

Sample Location Sample Date Sample Time Analyte/TEF	APFT-SS04-B 10/07/2010 15:25		APFT-SS04-C 10/07/2010 15:33		APFT-SS05-A 10/07/2010 15:47		APFT-SS05-B 10/07/2010 15:56		APFT-SS05-C 10/07/2010 16:02		APSL-SS01-A 10/07/2010 09:35		APSL-SS01-B 10/07/2010 09:45		APSL-SS01-C 10/07/2010 10:24		APSL-SS02-A 10/07/2010 10:35		APSL-SS02-B 10/07/2010 10:59		APSL-SS02-C 10/07/2010 11:05	
	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ	Result	TEQ
2378-TCDD (1.0)	0.86 J	0.86	0.57 J	0.57	0.56 J	0.56	1.5 J	1.5		0		0	0.41 J	0.41		0		0	0.37 J	0.37		0
2378-TCDF (0.1)	1.46 J	0.146	0.93 J	0.093	0.85 J	0.085	0.55 J	0.055	0.75 J	0.075	0.62 J	0.062	0.73 J	0.073	0.57 J	0.057	0.51 J	0.051	0.75 J	0.075	0.55 J	0.055
12378-PeCDF (0.03)	0.94 B	0	0.86 B	0	0.48 J	0.0144		0	0.72 B	0	0.25 J	0.0075		0	0.25 B	0	0.36 J	0.0108	0.42 J	0.0126		0
2378-PeCDD (1.0)	2.14 J	2.14	1.16 J	1.16	1.16 J	1.16	1.47 J	1.47	1.06 J	1.06	0.42 J	0.42	1.6 J	1.6	0.51 J	0.51	0.38 J	0.38	0.45 J	0.45	0.96 J	0.96
23478-PeCDF (0.30)	1.44 J	0.432	0.89 J	0.267	0.66 J	0.198		0	0.96 J	0.288	0.43 J	0.129		0		0	0.49 J	0.147	0.8 J	0.24	0.93 J	0.279
123478-HxCDF (0.10)	4.79 J	0.479	2.54 J	0.254	3.23 J	0.323	7.98	0.798	2.5 J	0.25	0.89 J	0.089	1.03 J	0.103	1.1 J	0.11	1.46 J	0.146	2.61 J	0.261	3.27 J	0.327
23678-HxCDF (0.10)	3.78 J	0.378	1.92 J	0.192	2.59 J	0.259	4.98 J	0.498	1.99 J	0.199	0.61 J	0.061		0	0.68 J	0.068	1.07 J	0.107	1.97 J	0.197		0
123478-HxCDD (0.10)	3.45 J	0.345	2.18 J	0.218	2.56 J	0.256	4.39 J	0.439	2 J	0.2	0.74 J	0.074	2.97 J	0.297		0	0.64 J	0.064	0.69 J	0.069		0
123678-HxCDD (0.10)	12.4	1.24	6.09	0.609	11.8	1.18	26	2.6	5.87	0.587	1.49 J	0.149	3.93 J	0.393		0	1.89 J	0.189	3.12 J	0.312	6.54	0.654
123789-HxCDD (0.10)	10.8 J	1.08	4.19 J	0.419	8.06	0.806	8.86 J	0.886	6.02 J	0.602	2.25 J	0.225	8.7 J	0.87	2.24 J	0.224	2.33 J	0.233	3.09 J	0.309	15.5 J	1.55
234678-HxCDF (0.10)	4.92 J	0.492	1.6 J	0.16	4.23 J	0.423	3.05 J	0.305	3.17 J	0.317	0.92 J	0.092	0.59 J	0.059	1.01 J	0.101	1.57 J	0.157	2.7 J	0.27	2.79 J	0.279
123789-HxCDF (0.10)		0		0		0		0		0		0		0		0	0.057 J	0.0057		0		0
1234678-HpCDF (0.01)	86.5	0.865	40.6	0.406	131	1.31	311	3.11	51.9	0.519	9.59	0.0959	6.66	0.0666	6.7	0.067	44.3	0.443	100	1	67.4	0.674
1234678-HpCDD (0.01)	415	4.15	214	2.14	430	4.3	941	9.41	198	1.98	53.3	0.533	240	2.4	52.8	0.528	116	1.16	97	0.97	346	3.46
1234789-HpCDF (0.01)	6.32	0.0632	2.71 J	0.0271	7.89	0.0789	20.1	0.201	3.16 J	0.0316	0.62 J	0.0062		0		0	0.61 J	0.0061	0.96 J	0.0096		0
12346789-OCDD (0.0003)	7360	2.208	8190	2.457	7220	2.166	13000	3.9	4040	1.212	2590	0.777	14000	4.2	4110	1.233	23800	7.14	14500	4.35	12900	3.87
12346789-OCDF (0.0003)	446	0.1338	181	0.0543	605	0.1815	2010	0.603	237	0.0711	19	0.0057	19.5	0.00585	15.4	0.00462	13.3	0.00399	33.5	0.01005	24.1 J	0.00723
Total TEQ		15.012		9.0264		13.3008		25.775		7.3917		2.7263		10.4775		2.90262		10.244		8.90525		12.1152

All results in nanograms per kilogram (ng/kg)
Toxicity equivalents are based on 2005 World Health Organization scheme
J - Analyte was positively identified, concentration is an estimated value
B - Blank contamination
TEQ - Toxicity equivalent quotient
TEF - Toxic equivalency factor
Bolded - Total TEQ exceeded the Regional Screening Level of 4.5 ng/kg
Blank result cell indicates that the result was not detected

Table 3-2
Dioxins in Quality Control Samples
BoRit Asbestos Superfund Site, OU-1
Preliminary Groundwater Report - Phase 2 Remedial Investigation

Sample Location	RB-101007	
Sample Date	10/07/2010	
Sample Time	16:33	
Analyte/TEF	Result	TEQ
2378-TCDD (1.0)		0
2378-TCDF (0.1)	0.61 B	0
2378-PeCDF (0.03)		0
12378-PeCDD (1.0)		0
23478-PeCDF (0.30)	0.66 B	0
123478-HxCDF (0.10)		0
123678-HxCDF (0.10)		0
123478-HxCDD (0.10)		0
123678-HxCDD (0.10)		0
123789-HxCDD (0.10)		0
234678-HxCDF (0.10)		0
123789-HxCDF (0.10)		0
1234678-HpCDF (0.01)		0
1234678-HpCDD (0.01)	6.07 B	0
1234789-HpCDF (0.01)		0
12346789-OCDD (0.0003)	33.9 B	0
12346789-OCDF (0.0003)	3.8 B	0
Total TEQ		0

All results in picograms per liter (pg/L)

Toxicity equivalents are based on 2005 World Health Organization scheme

RB-101007 is an aqueous quality control rinsate blank of the sampling tools used to sample Dioxins in soil

B - Blank contamination

TEQ - Toxicity equivalent quotient

TEF - Toxic equivalency factor

Blank result cell indicates that the result was not detected

Table 3-3

Volatile Organics in Groundwater

BoRit Asbestos Superfund Site, OU-1

Preliminary Groundwater Report - Phase 2 Remedial Investigation

Sample Number :	C0051	C0056	C0039	C0042	C0044	C0045	C0046	C0053	C0041	C0049	C0052	C0055	C0050	C0043	C0047	C0054	C0057
Sampling Location :	PKMW01-1011	PKMW01A-1011	PKMW02-1011	RVMW03-1011	RVMW04-1011	APMW05-1011	APMW05D-1011	APMW06-1011	FB-101108	FB-101109	FB-101110	FB-101115	RB-101109	TB-101108	TB-101109	TB-101110	TB-101115
Field QC:						Dup of C0046	Dup of C0045		Field Blank	Field Blank	Field Blank	Field Blank	Rinsate Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
Matrix :	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Units :	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date Sampled :	11/10/2010	11/15/2010	11/9/2010	11/8/2010	11/9/2010	11/9/2010	11/9/2010	11/10/2010	11/8/2010	11/9/2010	11/10/2010	11/15/2010	11/9/2010	11/8/2010	11/9/2010	11/10/2010	11/15/2010
Time Sampled :	09:05	12:30	16:00	16:15	11:00	14:30	14:45	15:30	16:00	15:00	09:30	11:00	16:30	16:00	00:00	16:40	10:00
pH :	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Dilution Factor :	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Volatile Compound	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
1,1,1-Trichloroethane	910																
1,1,2,2-Tetrachloroethane	0.067																
1,1,2-Trichloro-1,2,2-trifluoroethane	5900																
1,1,2-Trichloroethane	0.24																
1,1-Dichloroethane	2.4																
1,1-Dichloroethane	34																
1,2,3-Trichlorobenzene	2.9																
1,2,4-Trichlorobenzene	2.3																
1,2-Dibromo-3-chloropropane	3E-04																
1,2-Dibromoethane	0.007																
1,2-Dichlorobenzene	37																
1,2-Dichloroethane	0.15																
1,2-Dichloropropane	0.39								UL								UL
1,3-Dichlorobenzene																	
1,4-Dichlorobenzene	0.43																
1,4-Dioxane	6.1			UL		UL		UL		UL				UL			
2-Butanone	710																
2-Hexanone	4.7																
4-Methyl-2-pentanone	200																
Acetone	2200	13		9.4	B							7.9	J				13
Benzene	0.41																
Bromochloromethane																	
Bromodichloromethane	0.12																
Bromoform	8.5								UL								UL
Bromomethane	0.87																
Carbon disulfide	100																
Carbon tetrachloride	0.44			5.8													
Chlorobenzene	9.1																
Chloroethane	2100																
Chloroform	0.19																
Chloromethane	19																
cis-1,2-Dichloroethene	37																
cis-1,3-Dichloropropene																	
Cyclohexane	1300								UL								UL
Dibromochloromethane	0.15																
Dichlorodifluoromethane	39																
Ethylbenzene	1.5																
Isopropylbenzene	68																
m,p-Xylene																	
Methyl acetate	3700																
Methyl tert-butyl ether	12																
Methylcyclohexane									UL								UL
Methylene chloride	4.8	9.0	B	13	B	6.6	B	6.3	B	6.7	B	6.8	B	9.6	B	4.8	B
o-Xylene	120																
Styrene	160																
Tetrachloroethene	0.11			22													
Toluene	230																
trans-1,2-Dichloroethene	11																
trans-1,3-Dichloropropene																	
Trichloroethene	2																
Trichlorofluoromethane	130			30													
Vinyl chloride	0.016																

Notes:

Case #: 40399

SDG : C0041 and C0055

ug/L = microgram per liter

UL = Not detected, quantitation limit is probably higher.

B = Analyte not detected substantially above the level reported in laboratory or field blanks.

J = Analyte present. Reported value may not be accurate or precise.

Bolded results exceed Regional Screening Level (RSL).

Noncarcinogen RSLs are divided by 0.1 at the direction of EPA.

PKMW01 replaced by PKMW01A.

Blank result cell indicates that the result was not detected above the method detection limit.

Table 3-4
Semivolatile Organics in Groundwater
BoRit Asbestos Superfund Site, OU-1
Preliminary Groundwater Report - Phase 2 Remedial Investigation

Sample Number :	C0051	C0056	C0039	C0042	C0044	C0045	C0046	C0053	C0041	C0049	C0052	C0055	C0050													
Sampling Location :	PKMW01-1011	PKMW01A-1011	PKMW02-1011	RVMW03-1011	RVMW04-1011	APMW05-1011	APMW05D-1011	APMW06-1011	FB-101108	FB-101109	FB-101110	FB-101115	RB-101109													
Field QC:						Dup of C0046	Dup of C0045		Field Blank	Field Blank	Field Blank	Field Blank	Rinsate Blank													
Matrix :	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water													
Units :	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L													
Date Sampled :	11/10/2010	11/15/2010	11/9/2010	11/8/2010	11/9/2010	11/9/2010	11/9/2010	11/10/2010	11/8/2010	11/9/2010	11/10/2010	11/15/2010	11/9/2010													
Time Sampled :	09:05	12:30	16:00	16:15	11:00	14:30	14:45	15:30	16:00	15:00	09:30	11:00	16:30													
Dilution Factor :	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0													
Semivolatile Compound	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag											
1,1'-Biphenyl	180																									
1,2,4,5-Tetrachlorobenzene	1.1																									
2,2'-Oxybis(1-chloropropane)	0.32																									
2,3,4,6-Tetrachlorophenol	110																									
2,4,5-Trichlorophenol	370																									
2,4,6-Trichlorophenol	6.1																									
2,4-Dichlorophenol	11																									
2,4-Dimethylphenol	73																									
2,4-Dinitrophenol	7.3			R									R													
2,4-Dinitrotoluene	0.22																									
2,6-Dinitrotoluene	3.7																									
2-Chloronaphthalene	290																									
2-Chlorophenol	18																									
2-Methylnaphthalene	15																									
2-Methylphenol	180																									
2-Nitroaniline	37																									
2-Nitrophenol																										
3,3'-Dichlorobenzidine	0.15																									
3-Nitroaniline																										
4,6-Dinitro-2-methylphenol	0.37																									
4-Bromophenyl-phenylether																										
4-Chloro-3-methylphenol	370																									
4-Chloroaniline	0.34																									
4-Chlorophenyl-phenylether																										
4-Methylphenol	18																									
4-Nitroaniline	3.4																									
4-Nitrophenol																										
Acenaphthene	220																									
Acenaphthylene																										
Acetophenone	370																									
Anthracene	1100																									
Atrazine	0.29																									
Benzaldehyde	370																									
Benzo(a)anthracene	0.029																									
Benzo(a)pyrene	0.003																									
Benzo(b)fluoranthene	0.029																									
Benzo(g,h,i)perylene																										
Benzo(k)fluoranthene	0.29																									
Bis(2-chloroethoxy)methane	11																									
Bis(2-chloroethyl)ether	0.012																									
Bis(2-ethylhexyl)phthalate	4.8	3.1	J			55				3.0	J	42		26		14				2.9	J	9.2			2.6	J
Butylbenzylphthalate	35																									
Caprolactam	1800																									
Carbazole																										
Chrysene	2.9																									
Dibenzo(a,h)anthracene	0.003																									
Dibenzofuran	3.7																									
Diethylphthalate	2900																									
Dimethylphthalate																										
Di-n-butylphthalate	370																									
Di-n-octylphthalate																										
Fluoranthene	150																									
Fluorene	150																									
Hexachlorobenzene	0.042																									
Hexachlorobutadiene	0.86																									
Hexachlorocyclopentadiene	22																									
Hexachloroethane	4.8																									
Indeno(1,2,3-cd)pyrene	0.029																									
Isophorone	71																									
Naphthalene	0.14																									
Nitrobenzene	0.12																									
N-Nitroso-di-n-propylamine	0.01																									
N-Nitrosodiphenylamine	14																									
Pentachlorophenol	0.17				R																			R		
Phenanthrene																										
Phenol	1100																									
Pyrene	110																									

Notes:
Case #: 40399
SDG : C0041 and C0055
ug/L = microgram per liter
J = Analyte present. Reported value may not be accurate or precise.
R = Rejected
Bolded results exceed Regional Screening Level (RSL).
Noncarcinogen RSLs are divided by 0.1 at the direction of EPA.
PKMW01 replaced by PKMW01A.
Blank result cell indicates that the result was not detected above the method detection limit.

Table 3-5
Pesticides/PCBs in Groundwater
BoRit Asbestos Superfund Site, OU-1
Preliminary Groundwater Report - Phase 2 Remedial Investigation

Sample Number : Sampling Location : Field QC: Matrix : Units : Date Sampled : Time Sampled : Dilution Factor :		C0051 PKMW01-1011		C0056 PKMW01A-101		C0039 PKMW02-1011		C0042 RVMW03-1011		C0044 RVMW04-1011		C0045 APMW05-1011 Dup of C0046		C0046 APMW05D-101 Dup of C0045		C0053 APMW06-1011		C0041 FB-101108 Field Blank		C0049 FB-101109 Field Blank		C0052 FB-101110 Field Blank		C0055 FB-101115 Field Blank		C0050 RB-101109 Rinsate Blank	
ug/L		Water ug/L 11/10/2010 09:05 1.0		Water ug/L 11/15/2010 12:30 1.0		Water ug/L 11/9/2010 16:00 1.0		Water ug/L 11/8/2010 16:15 1.0		Water ug/L 11/9/2010 11:00 1.0		Water ug/L 11/9/2010 14:30 1.0		Water ug/L 11/9/2010 14:45 1.0		Water ug/L 11/10/2010 15:30 1.0		Water ug/L 11/8/2010 16:00 1.0		Water ug/L 11/9/2010 15:00 1.0		Water ug/L 11/10/2010 09:30 1.0		Water ug/L 11/15/2010 11:00 1.0		Water ug/L 11/9/2010 16:30 1.0	
Aroclor Compound	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
*Aroclor-1016	0.96																										
*Aroclor-1221	0.0068																										
*Aroclor-1232	0.0068																										
*Aroclor-1242	0.034																										
*Aroclor-1248	0.034																										
*Aroclor-1254	0.034																										
*Aroclor-1260	0.034																										
*Aroclor-1262																											
*Aroclor-1268																											
Pesticide Compound																											
4,4'-DDD	0.28																										
4,4'-DDE	0.2																										
4,4'-DDT	0.2																										
Aldrin	0.004																										
alpha-BHC	0.011																										
alpha-Chlordane																											
beta-BHC	0.037																										
delta-BHC																											
Dieldrin	0.0042																										
Endosulfan I																											
Endosulfan II																											
Endosulfan sulfate																											
Endrin	1.1																										
Endrin aldehyde																											
Endrin ketone																											
gamma-BHC (Lindane)	0.061																										
gamma-Chlordane																											
Heptachlor	0.015																										
Heptachlor epoxide	0.0074																										
Methoxychlor	18																										
Toxaphene	0.061																										

Notes:
Case #: 40399
SDG : C0041 and C0055
ug/l L = microgram per liter
Noncarcinogen RSLs are divided by 0.1 at the direction of EPA.
PKMW01 replaced by PKMW01A.
Blank result cell indicates that the result was not detected above the method detection limit.

Table 3-6

Dissolved Inorganics in Groundwater

BoRit Asbestos Superfund Site, OU-1

Preliminary Groundwater Report - Phase 2 Remedial Investigation

Sample Number:		MC1JE7		MC1JE9		MC1JE2		MC1JE3		MC1JE4		MC1JE5		MC1JE6		MC1JE8	
Sampling Location:		PKMW01-1011		PKMW01A-1011		PKMW02-1011		RVMW03-1011		RVMW04-1011		APMW05-1011		APMW05D-1011		APMW06-1011	
Field QC :												Dup. of MC1JE6		Dup. of MC1JE5			
Matrix:		Water		Water		Water		Water		Water		Water		Water		Water	
Units:		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled:		11/10/2010		11/15/2010		11/09/2010		11/08/2010		11/09/2010		11/09/2010		11/09/2010		11/10/2010	
Time Sampled:		09:05		12:30		16:00		16:15		11:00		14:30		14:45		15:30	
Dilution Factor:		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0	
ANALYTE	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	3700	1510															
ANTIMONY	1.5		UL		UL		UL		UL		UL		UL		UL		UL
*ARSENIC	0.045							7.6	J					5	J		
BARIUM	730	669		175	J	112	J	561		20.4	J	27.4	J	20.8	J	101	J
BERYLLIUM	7.3																
*CADMIUM	1.8											0.71	J	1.1	J		
CALCIUM		281000	J	58300	J	105000	J	104000	J	92500	J	268000	J	264000	J	113000	J
*CHROMIUM		19.4	B	8.3	B	2.7	B	3.8	B	1.7	B		UL		UL	5.4	B
COBALT	1.1																
COPPER	150	25.9		1.1	J	0.98	J	3	J			1.1	J	0.98	J	1.8	J
IRON	2600	78.2	J							147		135		125			
*LEAD		13.3	B					3	B								
MAGNESIUM				15200		19000		15300		4860	J	10800		10500		16200	
MANGANESE	88			4.4	J			9620		86.7		156		121		426	
*NICKEL	73																
POTASSIUM		73200		1490	J	2150	J	2140	J			3120	J	2670	J	4260	J
SELENIUM	18											14.3	J	13.1	J		
SILVER	18	2.8	B	1.8	B	1.2	B	1.6	B			2.1	B	1.2	B	2.7	B
SODIUM		94200		13500		22900		34400		13400		38500		37200		40600	
THALLIUM		3.6	B			6.7	B	9.1	B			3.7	B	3.7	B	3.9	B
VANADIUM	0.26																
ZINC	1100	18.3	J	9.1	J	4.6	J	9.5	J							10	J
MERCURY	0.057			0.08	B							0.05	B			0.1	B

Notes:

Case #: 40399

SDG: MC1JE2

ug/L = microgram per liter

UL = Not detected, quantitation limit is probably higher.

B = Analyte not detected substantially above the level reported in laboratory or field blanks.

J = Analyte present. Reported value may not be accurate or precise.

Bolded results exceed Regional Screening Level (RSL).

Noncarcinogen RSLs are divided by 0.1 at the direction of EPA.

PKMW01 replaced by PKMW01A.

Blank result cell indicates that the result was not detected above the method detection limit.

Table 3-7

Total Inorganics in Groundwater

BoRit Asbestos Superfund Site, OU-1

Preliminary Groundwater Report - Phase 2 Remedial Investigation

Sample Number:	MC0051	MC0056	MC0039	MC0042	MC0044	MC0045	MC0046	MC0053	MC0041	MC0049	MC0050	MC0052	MC0055
Sampling Location:	PKMW01-1011	PKMW01A-1011	PKMW02-1011	RVMW03-1011	RVMW04-1011	APMW05-1011	APMW05D-1011	APMW06-1011	FB-101108	FB-101109	RB-101109	FB-101110	FB-101115
Field QC:						Dup of MC0046	Dup of MC0045		Field Blank	Field Blank	Rinsate Blank	Field Blank	Field Blank
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date Sampled:	11/10/2010	11/15/2010	11/09/2010	11/08/2010	11/09/2010	11/09/2010	11/09/2010	11/10/2010	11/08/2010	11/09/2010	11/09/2010	11/10/2010	11/15/2010
Time Sampled:	09:05	12:30	16:00	16:15	11:00	14:30	14:45	15:30	16:00	15:00	16:30	09:30	11:00
Dilution Factor:	1.0	1.0	1.0	1.0	1.0 / 3.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ANALYTE	RSL	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	3700	1530		441				307					
ANTIMONY	1.5												
*ARSENIC	0.045							5.2	J				
BARIUM	730	670		175	J	99.0	J	525		20.9	J	8.1	J
BERYLLIUM	7.3									7.1	J	94.0	J
*CADMIUM	1.8												
CALCIUM		310000		60800		105000		101000		115000		164000	
*CHROMIUM		19.0	B							2.0	B	5.6	B
COBALT	1.1												
COPPER	150	26.5		3.6	J	1.4	J	3.5	J	0.80	J	0.81	J
IRON	2600	269		446		55.4	J	52.5	J	360		178	
*LEAD		6.9	B		UL		UL		UL		UL		UL
MAGNESIUM				15600		20200		15400		6030		8870	
MANGANESE	88	5.3	J	24.3		14.8	J	9190		95.9		157	
*NICKEL	73	27.3	J			8.2	J			149		450	
POTASSIUM		60400				2040	J	1660	J	1770	J	1520	J
SELENIUM	18									1490	J	3460	J
SILVER	18						UL		UL		UL		
SODIUM		97800	J	14400	J	24100	J	34100	J	120000	J	20100	J
THALLIUM		7.6	B	7.4	B	7.8	B	11.7	B	7.9	B	8.5	B
VANADIUM	0.26					10.6	J			7.3	B	7.9	B
ZINC	1100	32.7	J	4.7	J			5.8	J	4.5	J		
MERCURY	0.057	0.076	B										
*CYANIDE	73			3.8	J			8.2	J				

Notes:

Case #: 40399

SDG: MC0041

ug/L = microgram per liter

UL = Not detected, quantitation limit is probably higher.

B = Analyte not detected substantially above the level reported in laboratory or field blanks.

J = Analyte present. Reported value may not be accurate or precise.

Bolded results exceed Regional Screening Level (RSL).

Noncarcinogen RSLs are divided by 0.1 at the direction of EPA.

PKMW01 replaced by PKMW01A.

Blank result cell indicates that the result was not detected above the method detection limit.

Table 3-8

Asbestos in Groundwater

BoRit Asbestos Superfund Site, OU-1

Preliminary Groundwater Report - Phase 2 Remedial Investigation

Lab Sample No:	041026062-0002	041026062-0001	041026470-0002	041026470-0001	041025972-0005	041025972-0006	041025852-0001	041025972-0001
Sample No:	PKMW01-1011	PKMW01-1011(FILTERED)	PKMW01A-1011	PKMW01A-1011 (FILTERED)	PKMW02-1011	PKMW02-1011 (FILTERED)	RVMW03-1011	RVMW04-1011
Field QC:								
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water
Units:	MFL	MFL	MFL	MFL	MFL	MFL	MFL	MFL
Date Sampled:	11/10/2010	11/10/2010	11/15/2010	11/15/2010	11/9/2010	11/9/2010	11/8/2010	11/9/2010
Time Sampled:	9:05	9:05	12:30	12:30	16:00	16:00	16:15	11:00
	MCL							
Asbestos	7	<0.20	<0.20	<0.20	<0.17	<0.20	<0.20	0.51

Lab Sample No:	041025972-0002	041025972-0003	041026062-0004	041025852-0002	041025972-0004	041026062-0003	041026470-0003	041025972-0007
Sample No:	RVMW04-1011 (FILTERED)	APMW05-1011	APMW06-1011	FB-101108	FB-101109	FB-101110	FB-101115	RB-101109
Field QC:				Field Blank	Field Blank	Field Blank	Field Blank	Rinsate Blank
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water
Units:	MFL	MFL	MFL	MFL	MFL	MFL	MFL	MFL
Date Sampled:	11/9/2010	11/9/2010	11/10/2010	11/8/2010	11/9/2010	11/10/2010	11/15/2010	11/9/2010
Time Sampled:	11:00	14:30	15:30	16:00	15:00	9:30	11:00	16:30
	MCL							
Asbestos	7	<0.20	<0.20	<0.20	<0.20	<0.20	<0.17	<0.20

Notes:

MFL = million fibers per liter.

MCL = Maximum Contaminant Level.

Samples were field filtered using an inline 0.45 micron filter.

Samples were only field filtered if turbidity readings stabilized greater than 10 NTU.

Samples were analyzed using TEM Method EPA 100.2 (>10µm).

Detected fiber for RVMW04-1011 was a chrysotile fiber.

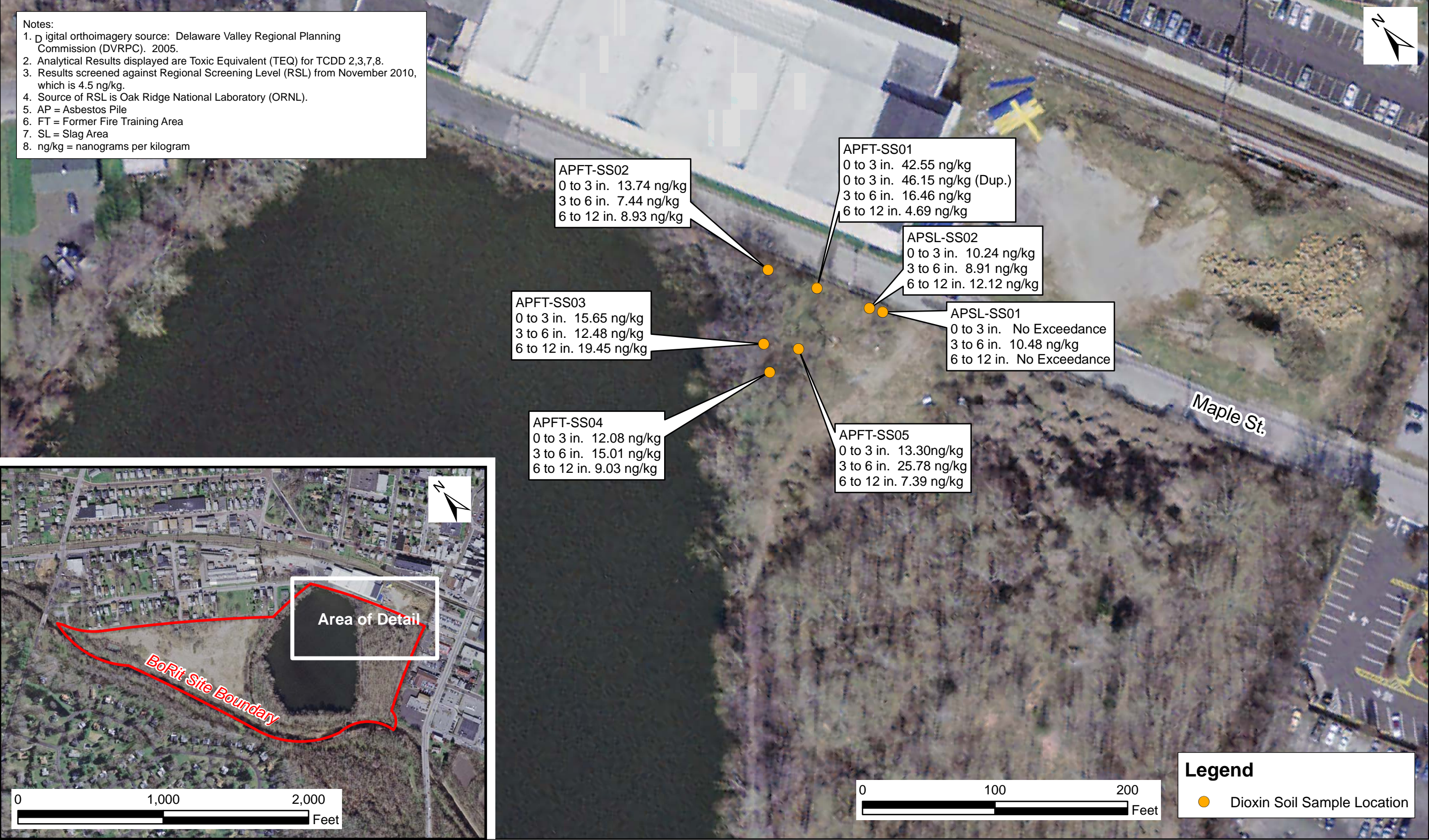
PKMW01 replaced by PKMW01A.

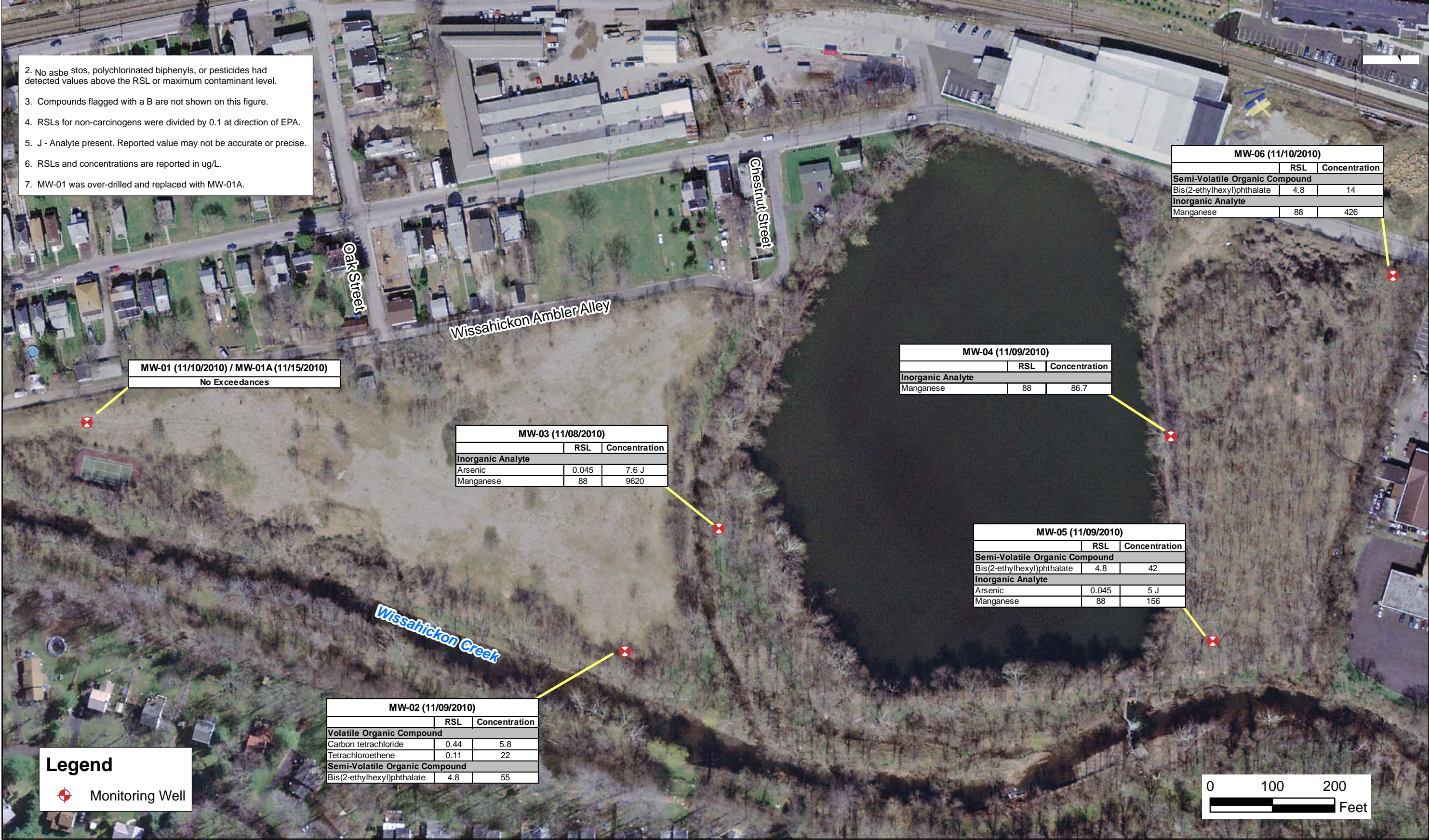
Figures















Appendix A
Phase 2 Hand Auger Table, Boring Logs and
Monitoring Completion Reports

Appendix A - Table 1
Summary of Hand Augered Soil Samples
Borit Asbestos Superfund Site, OU-1
Preliminary Groundwater Report - Phase 2 Remedial Investigation

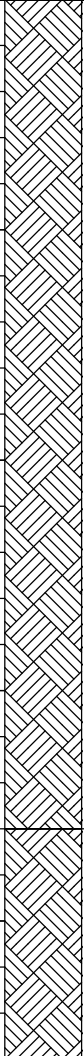
Site Location	Location Identifier	Hand Auger Boring Location		Sample Date	Grab Sample ID	Depth Range (ft bgs)	Analyses	QC Sample	Notes
		Easting	Northing						
Former Fire Training Area	APFT-SS01	2673755.225	309316.291	10/8/2010	APFT-SS01-A	0 - 0.25	Dioxins SVOCs PCBs/Pest	Duplicate; MS/MSD	Sample area contains large quantity of garbage and broken debris.
					APFT-SS01-B	0 - 0.5			Visible slag.
					APFT-SS01-C	0.5 - 2			Visible ACM within 6" - 24" layer.
	APFT-SS02	2673735.82	309350.7116	10/8/2010	APFT-SS02-A	0 - 0.25			Visible ACM within 0" - 3" layer.
					APFT-SS02-B	0 - 0.5			Visible ACM within 0" - 6" layer.
					APFT-SS02-C	0.5 - 2			Visible stacked ACM within 6" - 24" layer.
	APFT-SS03	2673697.416	309309.983	10/8/2010	APFT-SS03-A	0 - 0.25			Visible ACM within 0" - 6" layer.
					APFT-SS03-B	0 - 0.5			
					APFT-SS03-C	0.5 - 2			
	APFT-SS04	2673687.213	309290.8577	10/8/2010	APFT-SS04-A	0 - 0.25			
					APFT-SS04-B	0 - 0.5			
					APFT-SS04-C	0.5 - 2			
	APFT-SS05	2673715.035	309290.1627	10/8/2010	APFT-SS05-A	0 - 0.25			
					APFT-SS05-B	0 - 0.5			
					APFT-SS05-C	0.5 - 2			
Visible Slag Area	APSL-SS01	2673781.651	309270.723	10/8/2010	APSL-SS01-A	0 - 0.25	Asbestos Dioxins Metals SVOCs PCBs/Pest	Duplicate; MS/MSD	
					APSL-SS01-B	0 - 0.5			
					APSL-SS01-C	0.5 - 2			Visible ACM at approximately 18" bgs. Visible slag.
	APSL-SS02	2673775.715	309279.215	10/8/2010	APSL-SS02-A	0 - 0.25			Visible ACM and slag within 0" - 3" layer.
					APSL-SS02-B	0 - 0.5			Visible ACM and slag within 0" - 6" layer.
					APSL-SS02-C	0.5 - 2			Visible slag.

Notes and Abbreviations:
bgs: below ground surface
ACM = Asbestos containing material
AP = Asbestos pile
FT = Former fire training area
SL = Visible slag area
SS = Surface soil
SVOC = Semivolatile organic compound
PCB = Polychlorinated biphenyl
Pest = Pesticide

PROJECT: Borit Asbestos		HSA/AIR HAMMER NO: MW-01	
LOCATION: Ambler, Pennsylvania		USEPA	
STARTED: 10/20/10 COMPLETED: 10/26/10 DRILLING COMPANY: Uni-Tech DRILLING EQUIPMENT: CME-85/Reichdrill T-650-W DRILLING METHOD: HSA/Air Rotary, 6 In. Dia. Borehole SAMPLING METHOD: Split Spoon SURFACE COMPLETION: Steel Stickup		NORTHING: 310291.04 FT EASTING: 2672266.28 FT G.S. ELEVATION: 191.59 FT M.P. ELEV: 193.55 WATER: 48 FT TOTAL DEPTH: 53.0 FT LOGGED BY: S. Moller HORIZONTAL DATUM: NAD83, COORD. SYS.: State Plane PA South	

DEPTH (feet) -	GRAPHIC LOG -	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections								
1			FILL: Topsoil over silty sand with clay to trace clay, trace coarse to gravel, silt, moist, loose.	0 to 2	1.33	8 8 9 9	0	190												
2			BACS: Suspect ACM at 1 foot, dark gray mottled with black, tan, brown, silty material with sand. Clay and gravel-sized ACM. Slag at 2.5 feet.	2 to 4	1.83	7 13 11 10	0													
3																				
4																				
5			BACS: Light gray mottled silty, clayey material with bulk ACM chips and wood fibers throughout. 4 feet slag at 8 feet. Wet at bottom of sample.	4 to 6	2	8 10 13 9	0	185												
6				6 to 8	1.33	8 7 8 4	0													
7																				
8																				
9				8 to 10	1.5	6 6 7 8	0													
10																				
11		ML	Dark brown silt with clay. Moist, firm, less clay with depth. Native.	10 to 12	1.5	8 9 8 7	0	180												
12				12 to 14	1.5	5 5 9 10	0													
13																				
14		SM	Mottled silty sand with clay and gravel, medium dense, moist, dark brown.	14 to 16	0.5	50/6	0													
15			Fine medium grained reddish brown bedrock, sandstone. HSA refusal at 14.5 feet																	
16			Overdrill with 10 inch air hammer to 25 feet, install 6-inch steel casing. Cuttings primarily sandstone.					175												
17																				
18																				
19																				
20																				
21																				
22								170												
23																				
24																				
25																				
26			Drill below casing with 6-inch air hammer. Cuttings primarily sandstone.					165												
27																				
28																				
29																				

Abbreviations		Consistency vs Blowcount/Foot					
AAPW - Apparent asbestos process waste	NR - Not recorded	Granular (Sand):			Fine Grained (Clay):		
ACM - Asbestos containing material	WOH - Weight of hammer	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15		
BACM - Bulk ACM debris	WOR - Weight of rod	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30		
BACS - Bulk ACM debris mixed with soil		M. Dense: 10-30		M. Stiff: 4-8	Hard: >30		
NM - Not measured							

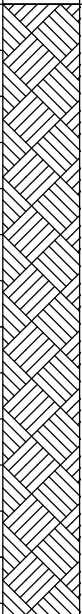
PROJECT: Borit Asbestos LOCATION: Ambler, Pennsylvania				HSA/AIR HAMMER NO: MW-01								
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet) -	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections
31			Drill below casing with 6-inch air hammer. - Cuttings primarily sandstone. (continued)					160				
32												
33												
34												
35												
36												
37								155				
38												
39												
40												
41												
42								150				
43												
44												
45												
46												
47								145				
48												
49			Drill below casing with 6-inch air hammer. Cuttings primarily sandstone. Water-bearing fracture encountered at 48 feet.									
50												
51												
52								140				
53			End of Boring at 53 feet bgs. Well Screen installed 43 - 53 feet. See well construction diagram.									
54												
55												
56												
57								135				
58												
59												
60												
61												
62								130				
63												
64												
65												
66												

PROJECT: Borit Asbestos				HSA/AIR HAMMER NO: MW-01A			
LOCATION: Ambler, Pennsylvania				USEPA			
STARTED: 11/11/10		COMPLETED: 11/12/10		NORTHING: 310291.04 FT		EASTING: 2672266.28 FT	
DRILLING COMPANY: Uni-Tech				G.S. ELEVATION: 191.59 FT		M.P. ELEV: 193.55	
DRILLING EQUIPMENT: CME-85/Reichdrill T-650-W				WATER: 48 FT		TOTAL DEPTH: 73.0 FT	
DRILLING METHOD: Air Rotary, 6 In. Dia. Borehole				LOGGED BY: J. Connor			
SAMPLING METHOD: Split Spoon				HORIZONTAL DATUM: NAD83, COORD. SYS.: State Plane PA South			
SURFACE COMPLETION: Steel Stickup							

DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft)	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL)	Other Detections
1			Over-drilled original MW-01 installed on 10/26/2010 due to possible grout infiltration of screened interval, as determined by high pH (12.3) results in groundwater and limited production of groundwater.					190				
2												
3												
4												
5												
6									185			
7												
8												
9												
10												
11									180			
12												
13												
14												
15												
16									175			
17												
18												
19												
20												
21												
22									170			
23												
24												
25												
26												
27									165			
28												
29												

Abbreviations				Consistency vs Blowcount/Foot			
AAPW - Apparent asbestos process waste		NR - Not recorded		Granular (Sand):		Fine Grained (Clay):	
ACM - Asbestos containing material		WOH - Weight of hammer		V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
BACM - Bulk ACM debris		WOR - Weight of rod		Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
BACS - Bulk ACM debris mixed with soil				M. Dense: 10-30		M. Stiff: 4-8	Hard: >30
NM - Not measured							

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PROJECT: Borit Asbestos				HSA/AIR HAMMER NO: MW-01A												
LOCATION: Ambler, Pennsylvania																
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft)	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL)	Other Detections				
31			Over-drilled original MW-01 installed on 10/26/2010 due to possible grout infiltration of screened interval, as determined by high pH (12.3) results in groundwater and limited production of groundwater. (continued)					160								
32																
33																
34																
35																
36																
37																
38																
39																
40																
41																
42																
43																
44																
45																
46																
47																
48																
49																
50																
51																
52																
53								Water changed from whitish to brown at 64 feet. Water flow rate consistent but low. pH reading dropped from 10.5 to 8.5.								
54																
55																
56																
57																
58																
59																
60																
61																
62																
63																
64																
65																
66																

BORIT LOGS WITH WATER DATA BORIT_ASBESTOS.GPJ STANDARD ENVIRONMENTAL PROJECT.GDT 02/24/11 REV.



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HSA/Air Hammer LOG
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PROJECT NO. 3330.029

PROJECT: Borit Asbestos					HSA/AIR HAMMER NO: MW-01A							
LOCATION: Ambler, Pennsylvania												
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft)	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL)	Other Detections
67												
68												
69			pH reading dropped to 7.5.									
70												
71								120				
72												
73												
74			End of Boring at 73 feet bgs. Well Screen installed 63 - 73 feet. See well construction diagram.									
75												
76												
77								115				
78												
79												
80												
81												
82								110				
83												
84												
85												
86												
87								105				
88												
89												
90												
91												
92								100				
93												
94												
95												
96								95				
97												
98												
99												
100												
101												
102								90				

BORIT LOGS WITH WATER DATA BORIT_ASBESTOS.GPJ STANDARD_ENVIRONMENTAL_PROJECT.GDT 02/24/11 REV.



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HSA/Air Hammer LOG
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PROJECT NO. 3330.029

PROJECT: Borit Asbestos		HSA/AIR HAMMER NO: MW-02	
LOCATION: Ambler, Pennsylvania		USEPA	
STARTED: 10/21/10 COMPLETED: 10/26/10 DRILLING COMPANY: Uni-Tech DRILLING EQUIPMENT: CME-85/Reichdrill T-650-W DRILLING METHOD: HSA/Air Rotary, 6 In. Dia. Borehole SAMPLING METHOD: Split Spoon SURFACE COMPLETION: Steel Stickup		NORTHING: 309420.41 FT EASTING: 2672617.53 FT G.S. ELEVATION: 196.48 FT M.P. ELEV: 198.06 WATER: 58 FT TOTAL DEPTH: 63.0 FT LOGGED BY: S. Moller HORIZONTAL DATUM: NAD83, COORD. SYS.: State Plane PA South	

DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft)	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL)	Other Detections	
1			FILL: Dark brown silty clay with gravel, wood pieces, dry, medium dense.	0 to 2	1.17	6 13 13 8	0	195					
2													
3			BACM: White silty material with fibers and bulk ACM, moist, fine medium fill. Dry to slightly moist.	2 to 4	0.83	7 6 5 7	0	190					
4													
5					4 to 6	1	5 9 6 5		0				
6													
7			BACM: White fibrous material and greenish-white bulk ACM, moist, soft.	6 to 8	0.25	6 5 2 2	0	185					
8													
9					8 to 10	0.25	5 2 2 3		0				
10													
11			BACS: Bulk ACM and silty fibrous material, gray, grayish-green, red, brown, slightly moist. Less bulk ACM, more silty, sandy material with depth. Moist. Wet.	10 to 12	0.5	4 3 4 3	0	180					
12													
13					12 to 14	0.67	4 3 2 3		0				
14													
15					14 to 16	0.083	2 2 1 2		0				
16													
17				16 to 18	0.17	2 2 2 2	0	175					
18													
19			BACS: Dark brown silt with trace gravel, wet, over bulk ACM and gravelly fill.	18 to 20	0.5	7 9 10 6	0						
20													
21				20 to 22	1	4 5 3 2	0						
22		SM	3 - 6 inch layers of fine medium silty sand with trace clay and fine silt, wet, dark, grayish brown. Native.										
23				22 to 24	1	2 7 3 7	0						
24		SM		24 to		10 11							

Abbreviations

AAPW - Apparent asbestos process waste
 ACM - Asbestos containing material
 BACM - Bulk ACM debris
 BACS - Bulk ACM debris mixed with soil
 NM - Not measured
 NR - Not recorded
 WOH - Weight of hammer
 WOR - Weight of rod

Consistency vs Blowcount/Foot

Granular (Sand):

V. Loose: 0-4 Dense: 30-50
 Loose: 4-10 V. Dense: >50
 M. Dense: 10-30

Fine Grained (Clay):

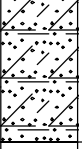
V. Soft: <2 Stiff: 8-15
 Soft: 2-4 V. Stiff: 15-30
 M. Stiff: 4-8 Hard: >30

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HSA/Air Hammer LOG
 Draft

PROJECT NO. 3330.029

PROJECT: Borit Asbestos LOCATION: Ambler, Pennsylvania				HSA/AIR HAMMER NO: MW-02								
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections
26		SM	Fine medium sand, silty sand with gravel and trace organics, red-brown to gray-brown, medium dense to dense. (continued)	26	1.5	17 18	0	170				
27			Reddish brown sandstone bedrock. HSA refusal at 26.4 feet	26 to 28	0.42	50/5	0					
28			Overdrill with 10-inch air hammer to 36 feet, install 6-inch steel casing. Cuttings primarily sandstone.									
29								165				
30												
31												
32								160				
33												
34												
35								155				
36			Reddish brown fine grained bedrock.									
37												
38								150				
39												
40												
41								145				
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												

PROJECT: Borit Asbestos					HSA/AIR HAMMER NO: MW-02							
LOCATION: Ambler, Pennsylvania												
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft)	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL)	Other Detections
56		▽	Reddish brown fine grained bedrock. (continued)					140				
57												
58												
59			Reddish brown fine grained bedrock. Water-bearing fracture encountered at 58 feet.									
60												
61								135				
62												
63												
64			End of boring at 63 feet bgs. Well Screen installed 53 - 63 feet. See well construction diagram.									
65												
66								130				
67												
68												
69												
70												
71												
72								125				
73												
74												
75												
76								120				
77												
78												
79												
80												
81								115				
82												
83												
84												
85												

BORIT LOGS WITH WATER DATA BORIT_ASBESTOS.GPJ STANDARD ENVIRONMENTAL PROJECT.GDT 02/24/11 REV.



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HSA/Air Hammer LOG
Draft

PROJECT NO. 3330.029

PROJECT: Borit Asbestos				HSA/AIR HAMMER NO: MW-03			
LOCATION: Ambler, Pennsylvania				USEPA			
STARTED: 10/22/10		COMPLETED: 10/28/10		NORTHING: 309452.96 FT		EASTING: 2672863.64 FT	
DRILLING COMPANY: Uni-Tech				G.S. ELEVATION: 181.7 FT		M.P. ELEV: 183.27	
DRILLING EQUIPMENT: CME-85/Reichdrill T-650-W				WATER: 48 FT		TOTAL DEPTH: 53.0 FT	
DRILLING METHOD: HSA/Air Rotary, 6 In. Dia. Borehole				LOGGED BY: S. Moller			
SAMPLING METHOD: Split Spoon				HORIZONTAL DATUM: NAD83, COORD. SYS.: State Plane PA South			
SURFACE COMPLETION: Steel Stickup							

DEPTH (feet) -	GRAPHIC LOG -	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections -
1			FILL: Silty clay with trace gravel, dark grayish-brown, slightly moist, medium dense.	0 to 2	0.83	10 10 9 8	0	180				
2		SM	Native. Fine medium silty sand with clay, trace rootlets, dark brown, slightly moist, loose.	2 to 4	1.67	7 4 6 5	0					
3												
4												
5		SP	Fine medium, trace clay sand, dark brown to black, slightly moist to wet, loose.	4 to 6	1.5	1 2 3 1	0	175				
6												
7		SC	Fine clay, sand with gravel, black and silty clay, dark gray, wet, soft/loose.	6 to 8	1.17	1 1 1 4	0	170				
8												
9												
10		CL	Reddish clay with fine sand and sub-rounded gravel, stiff, slightly moist.	8 to 10	2	NR NR NR NR	0	165				
11												
12		SC	Mixed reddish sandy clay and fine medium tan sand, slightly moist, very dense, layer of dark reddish brown rock at 12.4 feet.	10 to 12	1.33	3 4 15 13	0	160				
13				12 to 14	0.92	23 50/5	0					
14				14 to 16	0.42	50/5	0					
15												
16			Reddish brown fine grained bedrock. HSA refusal at 14.4 feet. Overdrill with 10 inch air hammer to 24 feet, install 6-inch steel casing.					155				
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
<div style="display: flex; justify-content: space-between;"> <div> <p>Abbreviations</p> <p>AAPW - Apparent asbestos process waste ACM - Asbestos containing material BACM - Bulk ACM debris BACS - Bulk ACM debris mixed with soil NM - Not measured</p> </div> <div> <p>NR - Not recorded WOH - Weight of hammer WOR - Weight of rod</p> </div> <div> <p>Consistency vs Blowcount/Foot</p> <p>Granular (Sand): V. Loose: 0-4 Dense: 30-50 Loose: 4-10 V. Dense: >50 M. Dense: 10-30</p> </div> <div> <p>Fine Grained (Clay): V. Soft: <2 Stiff: 8-15 Soft: 2-4 V. Stiff: 15-30 M. Stiff: 4-8 Hard: >30</p> </div> </div>												

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BORIT LOGS WITH WATER DATA BORIT_ASBESTOS.GPJ STANDARD ENVIRONMENTAL PROJECT.GDT 02/24/11 REV.

PROJECT: Borit Asbestos LOCATION: Ambler, Pennsylvania				HSA/AIR HAMMER NO: MW-03								
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet) -	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL) -	Other Detections -
31			Drilling below casing with 6-inch air hammer. - (continued)					150				
32												
33												
34												
35												
36												
37								145				
38												
39												
40												
41												
42								140				
43												
44												
45												
46												
47								135				
48												
49			Drilling below casing with 6-inch air hammer. Water-bearing fracture encountered at 48 feet.									
50												
51												
52								130				
53												
54			End of Boring at 53 feet bgs. Well Screen installed 43 - 53 feet. See well construction diagram.									
55												
56												
57								125				
58												
59												
60												
61												
62								120				
63												
64												
65												
66												

PROJECT: Borit Asbestos				HSA/AIR HAMMER NO: MW-04								
LOCATION: Ambler, Pennsylvania				USEPA								
STARTED: 10/27/10 COMPLETED: 11/2/10 DRILLING COMPANY: Uni-Tech DRILLING EQUIPMENT: CME-85/Reichdrill T-650-W DRILLING METHOD: HSA/Air Rotary, 6 In. Dia. Borehole SAMPLING METHOD: Split Spoon SURFACE COMPLETION: Steel Flush-mount				NORTHING: 309044.44 FT EASTING: 2673481.37 FT G.S. ELEVATION: 195.79 FT M.P. ELEV: 195.44 WATER: 95 FT TOTAL DEPTH: 100.0 FT LOGGED BY: S. Moller HORIZONTAL DATUM: NAD83, COORD. SYS.: State Plane PA South								
DEPTH (feet) -	GRAPHIC LOG -	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections -
1			FILL: Road gravel over dark gray wet clay, firm.	0 to 2	0.83	16 18 19 5	0	195				
2			BACS: 4-inch red clay over grayish-white fibrous silty material, slightly moist, soft.	2 to 4	1.17	12 8 8 6	0					
3												
4				4 to 6	1.5	1 2 1 2	0	190				
5												
6			BACS: 4-inch red clay over grayish-white fibrous silty material, slightly moist, soft. Layers of green, red gray, brown fill, very soft.	6 to 8	1.5	1 - 1 - 1 -	0					
7												
8			BACS: 4-inch red clay over grayish-white fibrous silty material, slightly moist, soft. Wet in area near shoe.	8 to 10	2	WOH WOH WOH WOH	0					
9												
10				10 to 12	2	WOH WOH WOH WOH	0	185				
11			BACS: White, very soft, spongy, vermiculite-like material with colored laminae. Black mucky material from 12 to 13 feet, then back to white.	12 to 14	2	WOH WOH WOH WOH	0					
12												
13				14 to 16	0.33	2 WOH WOH WOH	0	180				
14		SM	Native, dark brown silty sand, moist, very soft.									
15				16 to 18	2	WOH WOH WOH WOH	0					
16		ML	Fine silt with sand and clay, very dark brown, very soft, wet.									
17				18 to 20	1.5	17 22 50/6	0					
18			Reddish brown to green slightly cemented sand apparent weathered sandstone, dense.									
19				20 to 22	1.5	7 10 12 12	0	175				
20			Same as above, becomes softer.									
21				22 to 24	0.83	22 25 28 40	0					
22			Same as above, becomes denser, greenish. PID malfunctions due to rain.									
23				24 to 26	0.67	21 50/5	NM	170				
24												
25			No Recovery	26 to 28	0	50/6	NM					
26												
27				28 to 30	1.5	25 30 50/2	NM					
28			Same as above, becomes denser, greenish. PID malfunctions due to rain.									
29												

Abbreviations		Consistency vs Blowcount/Foot			
AAPW - Apparent asbestos process waste	NR - Not recorded	Granular (Sand):		Fine Grained (Clay):	
ACM - Asbestos containing material	WOH - Weight of hammer	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
BACM - Bulk ACM debris	WOR - Weight of rod	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
BACS - Bulk ACM debris mixed with soil		M. Dense: 10-30		M. Stiff: 4-8	Hard: >30
NM - Not measured					

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PROJECT: Borit Asbestos				HSA/AIR HAMMER NO: MW-04								
LOCATION: Ambler, Pennsylvania												
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections
31			Black, very fine grained, very dense rock in shoe.	30 to 32 -	0.25	50/4	NM	165				
32			Greenish sandstone bedrock, very dense. HSA refusal at 32.1 feet.	32 to 34 -	0.17	50/2	NM					
33												
34			Overdrill with 10-inch air hammer to 44 feet, install 6-inch steel casings. Sandstone bedrock.					160				
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45			Darker reddish brown bedrock cuttings.					155				
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60			Return to gray-brown apparent sandstone cuttings.					145				
61												
62												
63												
64												
65												
66												
								140				
									</			

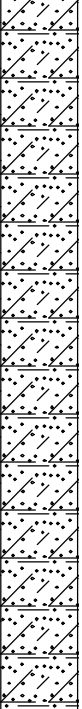
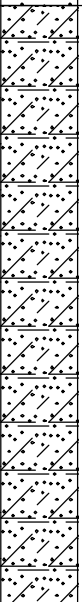
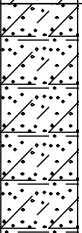

BORIT LOGS WITH WATER DATA BORIT_ASBESTOS.GPJ STANDARD ENVIRONMENTAL PROJECT.GDT 02/24/11 REV.



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HSA/Air Hammer LOG -
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PROJECT NO. 3330.029

PROJECT: Borit Asbestos LOCATION: Ambler, Pennsylvania				HSA/AIR HAMMER NO: MW-04								
DEPTH (feet) -	GRAPHIC LOG -	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL) -	Other Detections -
67			Return to gray-brown apparent sandstone cuttings. (continued)					125				
68												
69												
70												
71												
72												
73												
74												
75												
76												
77												
78												
79												
80												
81												
82			Sandstone bedrock cuttings.					115				
83												
84												
85												
86												
87												
88												
89												
90												
91												
92												
93												
94												
95												
96			Sandstone bedrock cuttings. Estimated depth of initial water-bearing fracture at 95 feet.					100				
97												
98												
99												
100												
101			End of boring at 100 feet bgs. Well screen installed 80 - 100 feet. See well construction diagram.					95				
102												

PROJECT: Borit Asbestos		HSA/AIR HAMMER NO: MW-05	
LOCATION: Ambler, Pennsylvania		USEPA	
STARTED: 10/27/10 COMPLETED: 10/29/10 DRILLING COMPANY: Uni-Tech DRILLING EQUIPMENT: CME-85/Reichdrill T-650-W DRILLING METHOD: HSA/Air Rotary, 6 In. Dia. Borehole SAMPLING METHOD: Split Spoon SURFACE COMPLETION: Steel Stickup		NORTHING: 308764.39 FT EASTING: 2673296.79 FT G.S. ELEVATION: 190.99 FT M.P. ELEV: 192.81 WATER: 58 FT TOTAL DEPTH: 64.0 FT LOGGED BY: S. Moller HORIZONTAL DATUM: NAD83, COORD. SYS.: State Plane PA South	

DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft)	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL)	Other Detections
1			FILL: Dark grayish-brown silty sand with clay, wet, medium dense with gravel.	0 to 2	0.67	7 14 14 7	0	190				
2			BACS: 6-inch gray silty material with bulk ACM over layers of dark gray, red, and white material, fibrous, slightly moist, loose/soft.	2 to 4	0.83	4 7 12 6	0	185				
3		4 to 6		0.83	5 3 1 2	0						
4		6 to 8		0.67	2 4 3 2	0						
5												
6		8 to 10		0.5	2 1 3 1	0	180					
7		10 to 12		0.5	1 1 1 1	0						
8		12 to 14	0.5	3 2 2 2	0							
9			BACM: Bulk ACM with wire reinforcing observed.	14 to 16	0.33	1 2 1 1	0	175				
10				16 to 18	0.5	2 5 4 4	0					
11				18 to 20	2	4 3 3 WOH	0					
12			20 to 22	1	2 3 1 1	0	170					
13		ML	Native, 3-inch silt with red-brown organics, 4-inch sand with silt and gravel over fine silt with clay and trace organics, wet, very soft, dark gray.	22 to 24	2	2 3 8	0	165				
14				24 to 26	1	8 11 7 8	0					
15		GWS	6-inch sand and gravel.	26 to 28	2	10 16 25 50	0					
16		ML	12-inch silt with clay.	28 to 30	0.5	21 50/5	0					
17		GWS	6-inch sand and gravel, loose/soft, wet, dark gray to dark grayish brown.									
18		SP	8-inch sand and gravel, same as above.									
19			4-inch weathered rock and sand, red, medium dense.									
20			Same as above. HSA refusal at 29 feet.									
21												

Abbreviations

AAPW - Apparent asbestos process waste
 ACM - Asbestos containing material
 BACM - Bulk ACM debris
 BACS - Bulk ACM debris mixed with soil
 NM - Not measured
 NR - Not recorded
 WOH - Weight of hammer
 WOR - Weight of rod

Consistency vs Blowcount/Foot

Granular (Sand):		Fine Grained (Clay):	
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30		M. Stiff: 4-8	Hard: >30

Camp, Dresser & McKee Inc
 14420 Albemarle Point Place Suite 210
 Chantilly, VA 20151
 Telephone: 703-968-0900
 Fax: 703-968-0915

HSA/Air Hammer LOG
 Draft

PROJECT NO. 3330.029

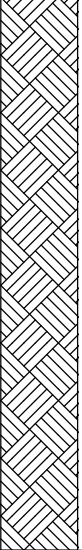
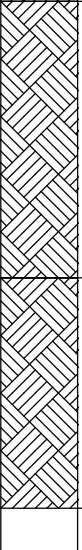



PROJECT: Borit Asbestos LOCATION: Ambler, Pennsylvania				HSA/AIR HAMMER NO: MW-05									
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections	
31			Overdrill with 10-inch air hammer to 39 feet, install 6-inch steel casing.					160					
32													
33													
34													
35													
36								155					
37													
38													
39													
40													
41													
42													
43													
44													
45													
46	145												
47													
48													
49													
50													
51	140												
52													
53													
54													
55													
56	135												
57													
58	Drilling below casing with 6-inch air hammer. - Water-bearing fracture encountered at 58 to 59 - feet. -												
59													
60													
61													130
62													
63													
64			End of boring at 64 feet bgs. Well screen installed at 54 - 64 feet. See well construction diagram.										
65													
66													125

PROJECT: Borit Asbestos				HSA/AIR HAMMER NO: MW-06								
LOCATION: Ambler, Pennsylvania				USEPA								
STARTED: 11/1/10 COMPLETED: 11/3/10 DRILLING COMPANY: Uni-Tech DRILLING EQUIPMENT: CME-85/Reichdrill T-650-W DRILLING METHOD: HSA/Air Rotary, 6 In. Dia. Borehole SAMPLING METHOD: Split Spoon SURFACE COMPLETION: Steel Stickup				NORTHING: 308974.05 FT EASTING: 2673915.60 FT G.S. ELEVATION: 195.07 FT M.P. ELEV: 196.95 WATER: 48 FT TOTAL DEPTH: 53.0 FT LOGGED BY: S. Moller HORIZONTAL DATUM: NAD83, COORD. SYS.: State Plane PA South								
DEPTH (feet) -	GRAPHIC LOG -	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE -	SAMPLE ID	Asbestos (MFL) -	Other Detections -
1			FILL: Road gravel over silty clay with gravel, possible ACM at 8 - 12 inches.	0 to 2	1	11 25 17 9	0	190				
2												
3			BACS: Layers of sand, fine medium, and red, gray, black silty material with asbestos fibers. Brick, fragments, possible slag, wet at 4 feet.	2 to 4	0.5	6 2 2 3	0					
4												
5					4 to 6	0.5	5 4 8 4	0				
6												
7			AAPW: Grayish white silty ACM, wet, very soft, paste texture.	6 to 8	1.5	1 1 2 2	0	185				
8												
9			FILL: Grayish brown silt with sand and clay, wet, soft, over 6 inch gray silty clay, wet, soft.	8 to 10	2	2 2 2 2	0					
10												
11		SM		Native, dark grayish-brown silt and fine medium sand, wet, loose. Trace organics, reddish-brown mottling below 10 feet.	10 to 12	2	WOH WOH WOH WOH	0				
12												
13			Weathered sandstone bedrock, greenish-white to reddish-brown to grayish-brown, dry, dense. Very dense below 16 feet. HSA refusal at 18 feet.	12 to 14	2	8 14 9 8	0	180				
14												
15					14 to 16	1	15 14 24 28		0			
16												
17			Overdrill with 10-inch air hammer to 28 feet, install 6-inch steel casing.	16 to 18	0.42	50/5	0	175				
18												
19				18 to 20	0.25	50/3	0					
20												
21								170				
22												
23												
24												
25												
26												
27												
28												
29			Sandstone cuttings.									

Abbreviations				Consistency vs Blowcount/Foot			
AAPW - Apparent asbestos process waste		NR - Not recorded		Granular (Sand):		Fine Grained (Clay):	
ACM - Asbestos containing material		WOH - Weight of hammer		V. Loose: 0-4 Dense: 30-50		V. Soft: <2 Stiff: 8-15	
BACM - Bulk ACM debris		WOR - Weight of rod		Loose: 4-10 V. Dense: >50		Soft: 2-4 V. Stiff: 15-30	
BACS - Bulk ACM debris mixed with soil				M. Dense: 10-30		M. Stiff: 4-8 Hard: >30	
NM - Not measured							

Camp, Dresser & McKee Inc 14420 Albemarle Point Place Suite 210 Chantilly, VA 20151 Telephone: 703-968-0900 Fax: 703-968-0915	HSA/Air Hammer LOG Draft	PROJECT NO. 3330.029
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PROJECT: Borit Asbestos					HSA/AIR HAMMER NO: MW-06							
LOCATION: Ambler, Pennsylvania												
DEPTH (feet)	GRAPHIC LOG	USCS	DESCRIPTION (Sampler Length: 2 Feet)	SAMPLE INTERVAL (feet)	RECOV. (feet)	BLOW COUNTS	PID (ppm)	ELEV. (ft) -	ANALYTICAL SAMPLE	SAMPLE ID	Asbestos (MFL) -	Other Detections -
31			Sandstone cuttings. (continued)					160				
32												
33												
34												
35												
36												
37												
38												
39												
40								155				
41												
42												
43			Dark brown cuttings at 42 feet. Slightly moist, back dry almost immediately. Water bearing fracture encountered at 48 feet.					150				
44												
45												
46												
47												
48												
49			Dark brown cuttings at 42 feet. Slightly moist, back dry almost immediately.									
50								145				
51												
52												
53												
54			Dark brown cuttings at 42 feet. Slightly moist, back dry almost immediately. Water bearing fracture encountered at 48 feet.					140				
55												
56												
57												
58												
59												
60								135				
61												
62												
63												
64												
65								130				
66												

BORIT LOGS WITH WATER DATA BORIT_ASBESTOS.GPJ STANDARD ENVIRONMENTAL PROJECT.GDT 02/24/11 REV.



Camp, Dresser & McKee Inc
14420 Albemarle Point Place Suite 210 -
Chantilly, VA 20151 -
Telephone: 703-968-0900 -
Fax: 703-968-0915

HSA/Air Hammer LOG -
Draft

PROJECT NO. 3330.029

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: MW-01

North: 310291.043

East: 2672266.282

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 10/20/2010

Date Completed: 10/26/2010

Logged By: S. Moller

Drilling Method: HSA/Air Rotary

Hole Depth: 53 ft. bgs

Elevation (ft. above msl): 191.6

Depth to Water (ft. bgs): 48

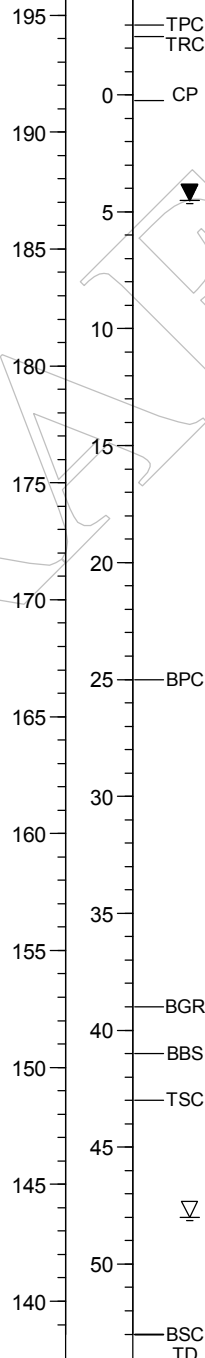
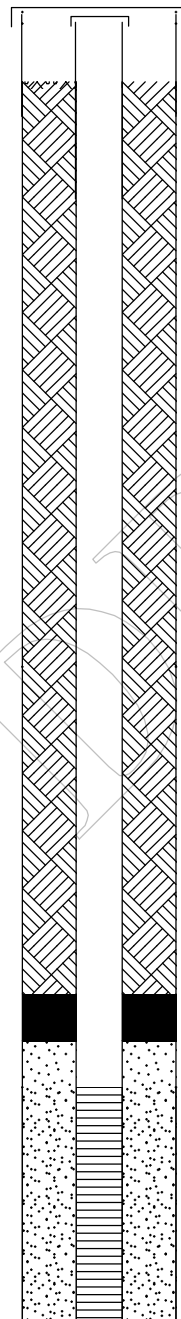
WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)



CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -3-25

INNER RISER CASING:

Diameter: 2 inches
Type: PVC
Interval: -2.5-43

GROUT

Type: Cement-bentonite
Interval: 0 - 39

BENTONITE SEAL

Type: Bentonite slurry
Interval: 39 - 41

SANDPACK

Type: # 1 Sand
Interval: 41 - 53

SCREEN

Diameter: 2 Inches
Type: 0.010 Slot PVC
Interval: 43 - 53

COMMENTS

Comment: Well over-drilled and replaced by MW-01A.

LEGEND

▽ WATER LEVEL DURING DRILLING

▼ STATIC WATER LEVEL, 11/3/10



CONCRETE PAD



CEMENT GROUT



BENTONITE SLURRY



FILTER PACK



SCREEN

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: MW-01A

North: 310291.043

East: 2672266.282

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 11/11/2010

Date Completed: 11/12/2010

Logged By: J. Connor

Drilling Method: Air Rotary

Hole Depth: 73 ft. bgs

Elevation (ft. above msl): 191.6

Depth to Water (ft. bgs): 48

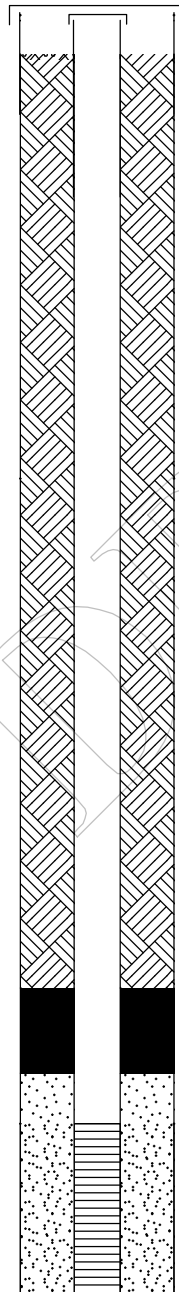
WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)



195
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120

0
5
10
15
20
25
30
35
40
45
50
55
60
65
70

TPC
TRC
CP
BPC
BGR
BBS
TSC
BSC
TD

CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -2.3 - 25

INNER RISER CASING:

Diameter: 2 inches
Type: PVC
Interval: -2-63

GROUT

Type: Cement-bentonite
Interval: 0 - 55

BENTONITE SEAL

Type: Bentonite slurry
Interval: 55 - 60

SANDPACK

Type: # 1 Sand
Interval: 60 - 73

SCREEN

Diameter: 2 Inches
Type: 0.010 Slot PVC
Interval: 63 - 73

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING
▼ STATIC WATER LEVEL, 11/8/10

CONCRETE PAD	TPC TOP PROTECTIVE CASING
CEMENT GROUT	TRC TOP OF RISER CASING
BENTONITE SLURRY	CP CONCRETE PAD
FILTER PACK	BPC BOTTOM OF PROTECTIVE-CASING
SCREEN	BGR BOTTOM OF GROUT
	BSS BOTTOM OF SAND SEAL
	BBS BOTTOM OF BENTONITE SEAL
	TSC TOP OF SCREEN
	BSC BOTTOM OF SCREEN
	TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: MW-02

North: 309420.408

East: 2672617.528

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 10/21/2010

Date Completed: 10/26/2010

Logged By: S. Moller

Drilling Method: HSA/Air Rotary

Hole Depth: 63 ft. bgs

Elevation (ft. above msl): 196.5

Depth to Water (ft. bgs): 58

WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)

CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -1.9 - 36

INNER RISER CASING:

Diameter: 2 inches
Type: PVC
Interval: -1.6-53

GROUT

Type: Cement-bentonite
Interval: 0 - 49

BENTONITE SEAL

Type: Bentonite slurry
Interval: 49 - 51

SANDPACK

Type: # 1 Sand
Interval: 51 - 63

SCREEN

Diameter: 2 Inches
Type: 0.010 Slot PVC
Interval: 53 - 63

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING

▼ STATIC WATER LEVEL, 11/8/10



CONCRETE PAD



CEMENT GROUT



BENTONITE SLURRY



FILTER PACK



SCREEN

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: MW-03

North: 309452.958

East: 2672863.643

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 10/22/2010

Date Completed: 10/28/2010

Logged By: S. Moller

Drilling Method: HSA/Air Rotary

Hole Depth: 53 ft. bgs

Elevation (ft. above msl): 181.7

Depth to Water (ft. bgs): 48

WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)

CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -2 - 24

INNER RISER CASING:

Diameter: 2 inches
Type: PVC
Interval: -2-43

GROUT

Type: Cement-bentonite
Interval: 0 - 39

BENTONITE SEAL

Type: Bentonite slurry
Interval: 39 - 41

SANDPACK

Type: # 1 Sand
Interval: 41 - 53

SCREEN

Diameter: 2 Inches
Type: 0.010 Slot PVC
Interval: 43 - 53

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING

▼ STATIC WATER LEVEL, 11/8/10



CONCRETE PAD



CEMENT GROUT



BENTONITE SLURRY



FILTER PACK



SCREEN

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: MW-04

North: 309044.437

East: 2673481.366

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 10/27/2010

Date Completed: 11/2/2010

Logged By: S. Moller

Drilling Method: HSA/Air Rotary

Hole Depth: 100 ft. bgs

Elevation (ft. above msl): 195.8

Depth to Water (ft. bgs): 95

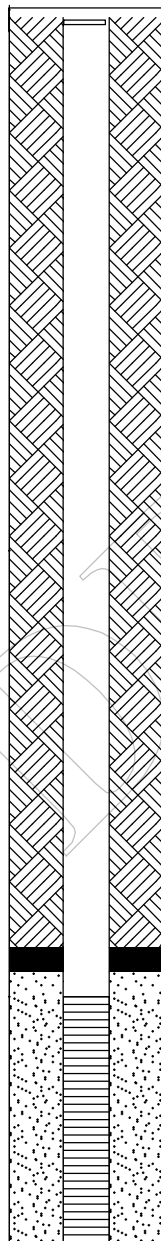
WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)



CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Flush-mount

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: 1 - 44

INNER RISER CASING:

Diameter: 2 inches
Type: PVC
Interval: 0.35-80

GROUT

Type: Cement-bentonite
Interval: 0 - 76

BENTONITE SEAL

Type: Bentonite slurry
Interval: 76 - 78

SANDPACK

Type: # 1 Sand
Interval: 78 - 100

SCREEN

Diameter: 2 Inches
Type: 0.010 Slot PVC
Interval: 80 - 100

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING

▽ STATIC WATER LEVEL, 11/8/10



CONCRETE PAD

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING



CEMENT GROUT

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING



BENTONITE SLURRY

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL



FILTER PACK

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN



SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: MW-05

North: 308764.389

East: 2673296.791

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 10/27/2010

Date Completed: 10/29/2010

Logged By: S. Moller

Drilling Method: HSA/Air Rotary

Hole Depth: 64 ft. bgs

Elevation (ft. above msl): 191.0

Depth to Water (ft. bgs): 58

WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)

CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -2.2 - 39

INNER RISER CASING:

Diameter: 2 inches
Type: PVC
Interval: -1.8-54

GROUT

Type: Cement-bentonite
Interval: 0 - 50

BENTONITE SEAL

Type: Bentonite slurry
Interval: 50 - 52

SANDPACK

Type: # 1 Sand
Interval: 52 - 64

SCREEN

Diameter: 2 Inches
Type: 0.010 Slot PVC
Interval: 54 - 64

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING

▼ STATIC WATER LEVEL, 11/8/10



CONCRETE PAD



CEMENT GROUT



BENTONITE SLURRY



FILTER PACK



SCREEN

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: MW-06

North: 308974.051

East: 2673915.598

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 11/1/2010

Date Completed: 11/3/2010

Logged By: S. Moller

Drilling Method: HSA/Air Rotary

Hole Depth: 53 ft. bgs

Elevation (ft. above msl): 195.1

Depth to Water (ft. bgs): 48

WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)

CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -2.2 - 28

INNER RISER CASING:

Diameter: 2 inches
Type: PVC
Interval: -1.9-43

GROUT

Type: Cement-bentonite
Interval: 0 - 39

BENTONITE SEAL

Type: Bentonite slurry
Interval: 39 - 41

SANDPACK

Type: # 1 Sand
Interval: 41 - 53

SCREEN

Diameter: 2 Inches
Type: 0.010 Slot PVC
Interval: 43 - 53

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING

▼ STATIC WATER LEVEL, 11/8/10



CONCRETE PAD



CEMENT GROUT



BENTONITE SLURRY



FILTER PACK



SCREEN

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: GT-06

North: 308999.388

East: 2673705.112

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 11/10/2010

Date Completed: 11/10/2010

Logged By: J. Connor

Drilling Method: HSA

Hole Depth: 40 ft. bgs

Elevation (ft. above msl): 220.1

Depth to Water (ft. bgs): 16

WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)

CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -1.91-3.09

INNER RISER CASING:

Diameter: 1 inches
Type: PVC
Interval: -1.8-26

GROUT

Type: Cement-bentonite
Interval: 0 - 26

SAND SEAL

Type: # 00 Sand
Interval: 26 - 28

SANDPACK

Type: # 1 Sand
Interval: 28 - 40

SCREEN

Diameter: 1 Inch
Type: 0.010 Slot PVC
Interval: 30 - 40

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING

▼ STATIC WATER LEVEL, 1/13/11



CONCRETE PAD



CEMENT GROUT



SAND SEAL



FILTER PACK



SCREEN

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: GT-07

North: 308906.631

East: 2673704.869

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 11/9/2010

Date Completed: 11/9/2010

Logged By: J. Connor

Drilling Method: HSA

Hole Depth: 24 ft. bgs

Elevation (ft. above msl): 208.6

Depth to Water (ft. bgs): 22

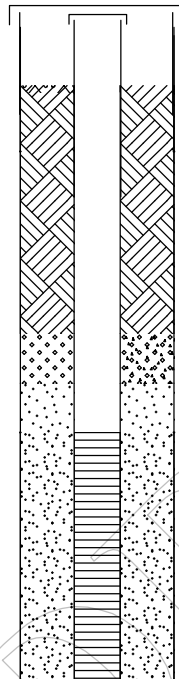
WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)



CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -2.34-2.66

INNER RISER CASING:

Diameter: 1 inches
Type: PVC
Interval: -2-10

GROUT

Type: Cement-bentonite
Interval: 0 - 10

SAND SEAL

Type: # 00 Sand
Interval: 10 - 12

SANDPACK

Type: # 1 Sand
Interval: 12 - 24

SCREEN

Diameter: 1 Inch
Type: 0.010 Slot PVC
Interval: 14 - 24

COMMENTS

Comment:

LEGEND

- ▽ WATER LEVEL DURING DRILLING
▼ STATIC WATER LEVEL, 1/13/11



CONCRETE PAD



CEMENT GROUT



SAND SEAL



FILTER PACK



SCREEN

TPC TOP PROTECTIVE CASING

TRC TOP OF RISER CASING

CP CONCRETE PAD

BPC BOTTOM OF PROTECTIVE-CASING

BGR BOTTOM OF GROUT

BSS BOTTOM OF SAND SEAL

BBS BOTTOM OF BENTONITE SEAL

TSC TOP OF SCREEN

BSC BOTTOM OF SCREEN

TD TOTAL DEPTH

CDM Federal Programs Corporation

14420 Albemarle Point Place
Suite 210
Chantilly, VA 20151

Well Name: GT-08

North: 308870.812

East: 2673579.425

Client: USEPA

Drilling Company: Uni-Tech

Project Location: Ambler, Pennsylvania

Project Name: Borit Asbestos

Project Number: 3330.029

Date Started: 11/9/2010

Date Completed: 11/9/2010

Logged By: J. Connor

Drilling Method: HSA

Hole Depth: 30 ft. bgs

Elevation (ft. above msl): 212.9

Depth to Water (ft. bgs): 12

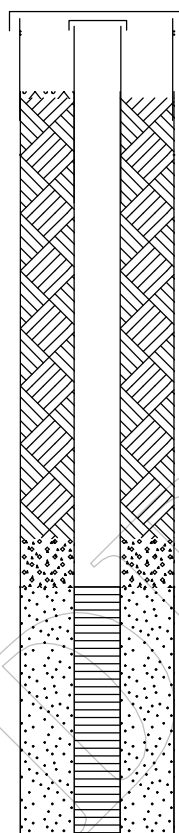
WELL DIAGRAM -

ELEVATION
(feet)

DEPTH
(feet)

INTERVAL

WELL CONSTRUCTION DETAILS (in feet bgs, unless otherwise indicated)



CONCRETE PAD

Dimensions: 3'x3'
Mount: Steel Stickup -

OUTER RISER CASING:

Diameter: 6 inches
Type: Carbon Steel
Interval: -2.43-2.57

INNER RISER CASING:

Diameter: 1 inches -
Type: PVC -
Interval: -2.3-18

GROUT

Type: Cement-bentonite
Interval: 0 - 18

SAND SEAL

Type: # 00 Sand
Interval: 18 - 20

SANDPACK

Type: # 1 Sand
Interval: 20 - 30

SCREEN

Diameter: 1 Inch
Type: 0.010 Slot PVC
Interval: 20 - 30

COMMENTS

Comment:

LEGEND

▽ WATER LEVEL DURING DRILLING

▼ STATIC WATER LEVEL, 11/12/10



CONCRETE PAD



CEMENT GROUT



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