August 8, 2012

Mr. David Brownlee
Acting Program Manager
Response & Remediation Program
Land Protection Branch
2 Martin Luther King Jr. Drive, SE
Suite 1462 East Floyd Tower
Atlanta, Georgia 30334

Subject: **Voluntary Remediation Plan Status Report No. 1**
Former Estech General Chemicals Site - Atlanta, Georgia
HSI Site No. 10196 Parcels 17-0191-LL0244 and 17-0191-LL0400
AMEC Project 6122-08-0154

Dear Mr. Brownlee:

AMEC Environment & Infrastructure, Inc. (AMEC) (formerly MACTEC Engineering and Consulting, Inc.), on behalf of BFEL Indemnitor, Inc. is hereby submitting the attached Status Report No.1 for Voluntary Remediation Program Remediation Activities for the Former Estech General Chemicals Site in Atlanta, Fulton County, Georgia (HSI Site No. 10196, Tax Parcels 17-0191-LL0244 and 17-0191-LL0400). This status report is required by the Voluntary Remediation Program (VRP) statue and requested by the Georgia Environmental Protection Division (EPD) in their approval letter dated February 8, 2012.

This status report covers the period from February 8, 2012 to shortly before submittal of this status report on August 8, 2012. The report includes information on the recent soil and groundwater investigation on the Estech property, response to EPD's February 8, 2012 comments, and summary of professional hours.

Sincerely,

AMEC Environment &Infrastructure, Inc.

Rhonda N. Quinn, P.G.
Senior Geologist
Georgia Registration# 1031

Gregory J. Wrenn, P.E.
Principal Engineer/Project Manager
Georgia Professional Engineer # 025565

Correspondence:
AMEC
1075 Big Shanty Road NW Suite 100
Kennesaw, Georgia 30144
Phone (770)-421-3400
Fax (770)-421-3486
amec.com

VOLUNTARY REMEDIATION PROGRAM STATUS REPORT NO. 1

FORMER ESTECH GENERAL CHEMICALS SITE
ATLANTA, FULTON COUNTY, GEORGIA
HSI Site No. 10196
Parcels 17-0191-LL0244 and 17-0191-LL0400

Submitted To:

GEORGIA ENVIRONMENTAL PROTECTION DIVISION
Atlanta Georgia

Submitted By:

BFEL Indemnitor Inc.
St. Charles, Illinois

Prepared By:

AMEC ENVIRONMENT & INFRASTRUCTURE, INC.
Kennesaw, Georgia

August 8, 2012
AMEC Project No. 6122-08-0154

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1.0 PE CERTIFICATION

"I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12-8-101, et seq.). I am a professional engineer/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances.

Furthermore, to document my direct oversight of the Voluntary Remediation Plan development, implementation of corrective action, and long term monitoring, I have attached a monthly summary of hours invoiced and description of services provided by me to the Voluntary Remediation Program participant since the previous submittal to the Georgia Environmental Protection Division.

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Gregory J. Wrenn/ Georgia P.E. #25565
Printed Name and GA PE Number

August 6, 2012
Date

GEORGIA REGISTERED No. 025565 PROFESSIONAL ENGINEER GREGORY J. WRENN

Signature and Stamp

2.0 INTRODUCTION AND BACKGROUND

This Voluntary Remediation Program Semi-Annual Status Report No. 1 (Status Report) was prepared in accordance with the Voluntary Remediation Plan (VRP) for the Former Estech General Chemical site, Hazardous Site Inventory (HSI) No. 10196/Tax Parcel Parcels 17-0191-LL0244 and 17-0191-LL0400. The Georgia Environmental Protection Division (EPD) requested in their February 8, 2012 approval letter that status reports be submitted in August and February. This first Status Report covers the activities conducted from EPD's February 8, 2012 approval of the VRP Application (March 2011) until shortly before the submittal of this status report (August 8, 2012).

The Former Estech General Chemicals site is located at 1551 Marietta Road in Atlanta, Fulton County, Georgia inside of the Inman Railyards. The CSX Transportation Tilford Yard is within the Inman Railyards and completely surrounds the Estech property. The site soil and groundwater impacts for site constituents (pesticides, arsenic, lead, and polynuclear aromatic hydrocarbons) were delineated under the Georgia Hazardous Site Response Act (HSRA) and certified to risk reduction standards. The most recent HSRA Compliance Status Report (CSR) was prepared and submitted October 19, 2007. EPD issued comments on the CSR, dated November 18, 2008. BFEL responded to the comments on February 27, 2009. EPD commented on the responses on December 18, 2009 and requested a Corrective Action Plan (CAP). An initial VRP Application, dated March 18, 2010 and an Addendum, dated March 16, 2011, were submitted to EPD to enter the site into the VRP. The VRP Application and Addendum were submitted in lieu of a HSRA CAP. The VRP Application Addendum contained a revised Voluntary Investigation and Remediation Plan (VIRP) and addressed the EPD VRP Application comment letter dated July 23, 2010. On February 8, 2012, EPD approved the VIRP and accepted the Former Estech General Chemicals site into the VRP. Also on February 8, 2012, EPD provided comments on the Application Addendum. Responses to these comments are provided in Appendix A of this Status Report.

3.0 WORK PERFORMED SINCE APPROVAL OF VRP APPLICATION UNTIL AUGUST 2012

The activities currently identified to be performed at the Estech site under the VRP are outlined in the VIRP, dated March 16, 2011, the EPD VIRP approval letter dated February 8, 2012, and the EPD VIRP comment letter dated February 8, 2012. The activities that have been performed since EPD's approval of the VRP Application have included execution of an affidavit to the property records documenting the site is listed on the HSI, submittal of financial assurance, conducting an investigation on the Estech property for copper and zinc, conducting soil sampling in areas where previous soil concentrations exceeded Exposure Point Concentrations (EPC) goals, and preparing a Work Plan and request for access to perform soil and groundwater investigations on CSX property. These activities are described in the following sections.

3.1 Property Records Affidavit

EPD requested in their February 8, 2012 approval letter that an affidavit stating that the property had been listed on the HSI and designated as needing corrective action due to the presence of hazardous waste, constituents or substances regulated under state law. The affidavit to the property deed denoting the site is on the HSI and needing corrective action was prepared and recorded with the Clerk of the Superior Court of Fulton County, Georgia on March 23, 2012. The receipt documenting the recording and a copy of the affidavit was submitted to EPD on April 6, 2012.

3.2 Financial Assurance Submittal

The Financial Assurance for 2012 (cost estimate and Performance Bond) was submitted to EPD on April 6, 2012. EPD confirmed their acceptance of the financial assurance in a letter dated April 26, 2012. The financial assurance was requested in the February 8, 2012 approval letter.

3.3 Supplemental Source Investigation on the Estech Property

EPD requested in their July 23, 2010 VRP Application comment letter that copper and zinc be analyzed in groundwater and surface water samples in the 2010 groundwater monitoring event. Copper and zinc were detected above Type 1 RRS in some monitoring wells and above the in-stream water quality standards in some of the surface water samples collected from the un-named stream downgradient of the site. Because the stream is a point of exposure, the copper and zinc concentrations in the stream are drivers for remediation on the Estech site. Previous investigations provided some copper and zinc data for evaluating the metals in the soil and groundwater. An additional investigation was conducted in May and June 2012 to collect data to further evaluate potential copper and zinc source areas and to supplement previous data on areas requiring remediation on the Estech property. Further investigation on the CSX property is pending CSX granting access to perform the work.

The investigation included soil and groundwater sampling and analysis with the installation of temporary monitoring wells on the Estech property. The soil and groundwater investigations are described below.

3.3.1 Copper and Zinc Soil Investigation

A total of 48 soil borings were advanced for the collection of soil samples for the analysis of copper and zinc. Twelve of the soil borings were completed as temporary monitoring wells. Thirty-six of the 48 soil borings were advanced for the collection of composite soil samples from areas identified as having constituent concentrations above EPC goals. A total of 63 soil samples were analyzed for total copper and zinc using USEPA method 6020.

Borings TW-1 to TW-12 were advanced from the ground surface to about 10 feet into groundwater using direct-push technology (DPT). Figure 1 presents the TW boring locations. Two to three soil samples were collected from each boring at 0 to 2 feet, an intermediate depth between the ground surface and groundwater, and the deepest unsaturated soil. The sampling data is summarized on Table 1. Upon completion of the

soil sampling, temporary wells were installed in the borings. The analytical results are summarized on Table 2 and laboratory reports are provided in Appendix B.

Areas A, B, F, G, H, boring HA-111, and well MW-101 (Figure 1) were identified as having soil arsenic and lead concentrations exceeding EPC goals. Section 3.4 further describes the investigation of the soil exceedance areas. As part of the investigation of arsenic and lead in the soil exceedance areas, soil samples were also collected for the analysis of copper and zinc. Four to seven soil borings were advanced using DPT drilling techniques in each area and were advanced to pre-determined depths based on previous data indicating the depth of the exceedances. Table 1 summarizes the sampling data for each area. Prior to sampling, the locations of previous soil borings with exceedances were located and staked using surveyed coordinates. Then the area was gridded into a block to encompass the previous soil borings with exceedances. The proposed sampling approach was based on an area averaging technique. Soil borings were advanced in each block, one boring in each corner and one or more borings through the middle of the block. The borings were advanced to the depths indicated on Table 1. Soil samples were composited from the borings based on depth, i.e., the soil samples from the 0 to 2 feet interval in the block were composited into one sample, soil samples from the 8 to 10 feet interval were composited into one sample and submitted to the laboratory for analysis. At previous borings/wells (MW-101, HA-111, SS-2, and SS-3) locations with exceedances, four new soil borings were advanced around the existing borings/wells at distance of about 10 feet from the boring/wells. The soil samples were composited as described above. Laboratory analyses were tailored to each area based on previous data indicating which constituent exceeded EPC goals. Table 1 summarizes the sampling and analysis program.

The analytical results for the copper and zinc soil investigation are summarized on Table 2. Copper was detected at concentrations ranging from 0.55 to 531 mg/kg. Twenty-six of the 63 soil samples had copper concentrations greater than the copper Type 1 soil Risk Reduction Standard (RRS) of 100 mg/kg at Areas A, B, F, G, H, wells MW-101, TW-1, TW-3, TW-4, TW-5, TW-6, and TW-10. Zinc was detected at concentrations ranging from 13.8 to 1810 mg/kg. Thirty-nine of the 63 soil samples had zinc concentrations greater than the zinc Type 1 soil Risk Reduction Standard of 100 mg/kg

at locations Areas A, B, F, G, H, boring HA-111, wells MW-101, TW-1, TW-3, TW-4, TW-5, TW-6, TW-7, TW-8, TW-9, and TW-10. Soil data from the United States Geological Survey (USGS) Open File Report 81-197 (Boerngen and Shacklette, 1981) shows that in Georgia naturally occurring copper soil concentrations range from 2 to 100 mg/kg and zinc concentrations to range from 5 to 400 mg/kg. The Estech property data is within these ranges and some samples are above. The areas with copper concentrations greater than the Shacklette upper range of concentrations (100 mg/kg) are the same as the areas with copper concentrations greater than the Type 1 RRS (Figures 2 to 4). Copper concentrations were above 100 mg/kg at Areas A, B, F, G, and H, well MW-101, TW-1, TW-3, TW-4, TW-5, TW-6, and TW-10. Twelve samples had zinc concentrations greater than the Shacklette upper range of concentrations (400 mg/kg) at locations Areas B, F, G, H, and wells TW-6, and TW-8.

Nine soil samples were selected for analysis using the Synthetic Precipitation Leaching Procedure (SPLP) (USEPA method 1312) to evaluate leaching of copper and zinc from soils to groundwater. The SPLP results are summarized on Table 3. The total copper concentrations in the nine samples ranged from 15.8 to 522 mg/kg and had SPLP concentrations ranging from non-detect at <0.002 mg/L to 0.362 mg/L. The copper leaching concentration in all SPLP samples was less than the Type 1 groundwater RRS (1.3 mg/L). The total zinc concentrations in the nine samples ranged from 76.8 to 1810 mg/kg and had SPLP concentrations ranging from non-detect at <0.01 mg/L to 7.22 mg/L. Only sample SB-H-10-12 had a zinc leaching concentration greater than the Type 1 groundwater RRS of 2 mg/L. The groundwater sample from well TW-7 had the highest copper and zinc concentrations; the soil sample TW-7-10-12 had some of the lowest copper (0.0213 mg/L) and zinc (<0.01 mg/L) leaching concentrations. Well TW-7 is located inside the former cooling pond area, which appears to be a source area. Four soil samples (TW-5-10-12, TW-6-18-20, SB-G-2-4, and SB-H-10-12) were also analyzed for pH and the results are shown on Table 3 and the lab report is provided in Appendix B. The soil pH ranged from 4.36 to 5.44 standard units.

This copper and zinc investigation was conducted only on the Estech property. Additional copper and zinc investigation will be conducted on the CSX property when access is granted. The investigation proposed for the CSX property will consist of

monitoring well installation near the un-named stream, soil, groundwater, and surface water sampling. Figures 2, 3, and 4 present the existing and new copper and zinc soils data and color-coded based on concentrations greater than 100 mg/kg (Type 1 RRS). The available data generally indicates there is not a clearly defined source in the soil for the copper and zinc. The majority of the copper and zinc concentrations greater than Type 1 RRS are in the 0 to 15 foot soil interval. SPLP data indicates the copper and zinc does leach from the soil, but in the majority of samples the leachate concentration is less than the Type 1 RRS. Delineation of copper and zinc in soil above Type 1 RRS will continue with the investigation on the CSX property.

3.3.2 Supplemental Groundwater Investigation

Twelve temporary wells were installed on the Estech property to investigate copper and zinc and other site constituents (Figure 1). The well borings were advanced at least 10 feet into groundwater using DPT and solid-stem auger drilling techniques after completion of soil sampling. Table 1 summarizes the depths. The wells were constructed with 1-inch diameter PVC casing and 10-feet length screens with pre-packed sand packs. Additional sand was added to the borehole to two feet above the screen and a bentonite-pellet seal was placed from above the sand to near the ground surface. Grout was placed on top of the bentonite and gravel was placed around the base of the casing at the ground surface. Well construction logs are provided in Appendix D. A water-tight locking cap was installed on the top of the well casing that extended above the ground surface. The wells were developed more than 24-hours after completion of well construction by pumping and surging with a small-diameter submersible bladder pump.

The 12 DPT-type wells were purged and sampled more than 24 hours after development using low flow/low stress methodology and sampled following Region 4 USEPA Science and Ecosystem Support Division (SESD) procedure SESDPROC-301-R1. A submersible bladder pump or a peristaltic pump was used to purge the wells. Three well volumes were purged from each well and groundwater samples were collected after pH, specific conductivity, turbidity, and temperature parameters had stabilized. The

sampling forms are included in Appendix B. The groundwater samples were collected and analyzed for the following constituents to supplement previous site data:

- Organochlorine pesticides using USEPA Method 8081A
- Arsenic, Lead, Copper, and Zinc using USEPA Method 6020 (total and dissolved analyses)
- Nitrate and Sulfate using USEPA Method 9056

The groundwater analytical results are summarized on Table 4 and the laboratory reports are provided in Appendix B. Figure 5 presents the metals data for the existing monitoring wells from 2010 and the current data for the 12 temporary wells. The copper and zinc groundwater data does not indicate clearly defined source of the copper and zinc impact. The plume as indicated on Figure 5 is located on the northern and eastern portions of the Estech property and the CSX property abutting the Estech eastern property boundary. The data indicates that copper and zinc concentrations in groundwater on the western portion or the southern portion of the property are either non-detect or below the Type 1 RRS. The 2010 copper and zinc concentrations in the three wells (MW-105, MW-106D, MW-107D) adjacent to the stream are less than the 2010 concentrations detected in the stream. The extent of copper and zinc in groundwater is defined based on Type 1 RRS values.

Total and dissolved arsenic and lead were also analyzed in the groundwater samples collected from the 12 temporary wells. Arsenic and lead concentrations were either non-detect or had trace concentrations below the Type 1 RRS and were generally less than the copper and zinc concentrations (Table 4). The extent of arsenic and lead in groundwater is defined based on Type 1 RRS values (Figure 5).

Organochlorine pesticides were analyzed in the groundwater samples collected from the 12 temporary wells. The results of the 12 temporary wells were consistent with the groundwater results from the permanent monitoring wells. Pesticides in groundwater are delineated based on Type 1 RRS values (Figure 6).

Nitrate and sulfate were analyzed in the groundwater samples collected from the 12 temporary wells. The results of the 12 temporary wells were consistent with the

groundwater results from permanent monitoring wells. Nitrate and sulfate in groundwater are delineated (Figure 7).

3.4 Soil Sampling in Areas Where Soils Exceeded EPC Goals

The proposed remediation plan for the Estech site includes excavation and/or capping of soils that exceed the EPC goals. Figure 1 presents the soil locations that exceed the EPC goals. Most of the soil analytical results from the exceedance areas were collected in 1984 and 1988 and may not be representative of current subsurface conditions. To better assess the previous constituent concentrations that exceeded EPC goals and the vertical extent of soils needing to be remediated, soil sampling and analysis was conducted in the areas of exceedances. The data obtained from this soil investigation will be used in the pre-design of the soil remediation program. Soil sampling was conducted in six areas (A, B, E, F, G, and H) and in four boring/well locations (HA-111, MW-101, SS-2, and SS-3). A total of 36 soil borings were advanced using DPT drilling techniques and 29 composite soil samples were collected and submitted to the laboratory. Table 1 summarizes the sampling and analysis program. Figure 1 presents the areas where soil sampling was conducted and Table 2 summarizes the soil results. The laboratory reports are provided in Appendix B.

The proposed soil sampling approach was based on an area averaging technique. Four to seven soil borings were advanced in each area and were advanced to a pre-determined depth based on previous data indicating the depth of the exceedances. Table 1 summarizes the sampling data for each area. Prior to sampling, the locations of previous soil borings with exceedances were located and staked using surveyed coordinates. Then the area was gridded into a block to encompass the previous soil borings with exceedances. Soil borings were advanced in each block, one boring in each corner and one or more borings across the middle of the block. The borings were advanced to the depths indicated on Table 1. Soil samples were composited from the borings based on depth, i.e., the soil samples from the 0 to 2 feet interval in the block were composited into one sample, soil samples from the 8 to 10 feet interval were composited into one sample and submitted to the laboratory for analysis. Laboratory

analyses were tailored to each area based on previous data indicating which constituent exceeded EPC goals.

The soil analytical results are summarized on Table 2. The 2012 soil results were added to the existing site data set and the UCLs and EPCs were re-calculated using the new data. The UCL and EPC calculation results are presented in Appendix C. The areas initially identified as exceeding, still exceed as indicated on the tables in Appendix C. Copper and zinc soil concentrations did not exceed the EPC goals. However, additional modeling of copper and zinc migration to surface water and calculation of copper and zinc concentrations in soil protective of surface water are still pending. Additionally, the most recent soil data did not confirm previous detections in some areas. Therefore, additional evaluation of the remediation areas will be conducted as part of the final soil remediation plan.

In Area A the previous surface soils concentrations exceeded the EPC Goals for alpha-BHC, beta-BHC, DDT, dieldrin, and arsenic. Previous Area A subsurface soil concentrations exceeded EPC Goals only for arsenic. The new composite surface soil sample (SB-A-0-2) for Area A and subsurface samples had pesticides concentrations less than RRS and less than the EPC Goals for these pesticide constituents. The Area A composite surface soil sample (SB-A 0-2) had an arsenic concentration greater than RRS, but less than the EPC Goal for arsenic. The composite subsurface soil samples (SB-A 3-5, 6-8, 8-10 feet) for Area A have arsenic concentrations greater than RRS for arsenic. Samples from 6-8 and 8-10 feet had arsenic concentrations greater than EPC Goals. Generally, the composite Area A samples had concentrations less than the previous soil concentrations, except for arsenic which was higher. Area A will require corrective action for surface and subsurface arsenic.

In Area B the prior surface soils concentrations exceeded the EPC Goals for alpha-beta-delta-BHC, and arsenic. Previous Area B subsurface soils exceeded EPC Goals for arsenic. The new composite surface soil sample (SB-B-0-2) for Area B had pesticides concentrations less than RRS and less than the EPC Goals for these pesticide constituents. The composite surface and subsurface soil samples (SB-B 0-2, 3-5, 6-8, 10-12 feet) for Area B have arsenic concentration greater than RRS for arsenic.

The surface sample and the 3-5 feet sample also exceeded the EPC goal for arsenic. Generally, the composite Area B samples had pesticides and metals concentrations similar to the previous soil concentrations, except for arsenic, DDT, and heptachlor which were higher. Area B will require corrective action for surface and subsurface arsenic.

In Area E the previous surface soils concentrations exceeded the EPC Goals for 2,4-dinitrotoluene and alpha-beta-delta-BHC. 2,4-Dinitrotoluene concentrations in the new composite surface and subsurface soil sample (SB-E-0-2) were less than RRS and EPC Goals. The composite surface soil sample (SB-E-0-2) for Area E had beta-BHC concentration greater than RRS, but less than the EPC Goal. Alpha and delta BHC surface concentrations were less than RRS and EPC Goals. Area E subsurface soils concentrations, prior to 2012, exceeded the arsenic EPC Goals as a result of the recalculation of the EPCs which included the 2012 data. Previously, the Area E subsurface soils did not exceed arsenic and metals were not analyzed in Area E soils in 2012. Generally, the composite Area E samples had pesticides concentrations higher than the previous soil concentrations. Area E will require corrective action for pesticides in the surface and arsenic in the subsurface.

In Area F the previous surface soils concentrations exceeded the EPC Goals for alpha-beta-delta-BHC, arsenic, and lead. Prior Area F subsurface soils exceeded EPC Goals for arsenic. The new composite surface soil sample (SB-F-0-2) for Area F had pesticides concentrations less than RRS and less than the EPC Goals for these pesticide constituents. Arsenic in the composite surface sample was greater than RRS and EPC Goals. Lead in the composite surface sample was greater than RRS, but less than the EPC Goals. Beta-BHC in the subsurface composite sample was above RRS. Arsenic and lead in the subsurface composite were greater than RRS and less than the EPC Goals. Generally, the composite Area F samples had pesticides and metals concentrations similar to the previous soil concentrations. Area F will require corrective action for surface and subsurface soils for arsenic, lead and subsurface for beta-BHC.

In Area G the previous surface soils concentrations exceeded the EPC Goals for arsenic and lead. Prior Area G subsurface soils exceeded EPC Goals for arsenic and lead.

Arsenic and lead in the composite surface sample was greater than RRS and EPC Goals. Arsenic and lead in the subsurface composite from 2-4 feet were greater than RRS and the EPC Goals. The 4-6 feet soil sample had an arsenic concentration greater than RRS, but less than the EPC Goals. Lead in the 4-6 feet sample was less than the RRS and EPC Goals. Generally, the composite Area G samples had arsenic and lead concentrations similar to the previous soil concentrations while the copper and zinc concentrations were higher than the previous data. Area G will require corrective action for surface and subsurface soils for arsenic and lead.

In Area H the previous surface soils concentrations exceeded the EPC Goals for lead while previous Area H subsurface soils exceeded EPC Goals for arsenic. Arsenic and lead in the composite surface sample was greater than RRS and EPC Goals. Arsenic and lead in the subsurface composite were greater than RRS. The arsenic samples from 3-5 feet, 8-10 feet, and 10-12 feet exceeded the arsenic EPC Goals while the lead samples were less than the EPC Goals. The composite Area samples had arsenic concentrations similar to the previous soil concentrations while the lead, copper and zinc concentrations were higher than the previous data. Area H will require corrective action for surface and subsurface soils for arsenic and lead.

The surface soil concentrations of arsenic and lead in boring HA-111 did not exceed the EPC Goals. In boring HA-111 subsurface samples arsenic and lead did exceed EPC Goals. Arsenic was not detected in the SB-H111 composite surface and subsurface soil samples. Lead in the composite surface sample and the 2-4 feet sample were greater than RRS and equal to or less than the EPC Goals, respectively. The 4-6 feet sample was greater than the RRS, but less than the EPC Goals. The lead concentration in the 6-8 feet sample was less than the RRS and EPC Goals. The composite Area samples had lead concentrations similar to the previous soil concentrations. Boring HA-111 Area will require corrective action for surface and subsurface soils to about six feet for lead.

The surface soil concentrations of alpha-beta-delta-BHC and DDT in surface soil sample SS-2 exceeded EPC Goals. The pesticide concentrations in the SS-2 composite surface and subsurface samples were less than RRS and less than EPC Goals. The composite

SS-2 Area samples were less than the previous soil concentrations. Boring SS-2 Area will not require corrective action for surface and subsurface soils.

The surface soil concentrations of alpha-beta-delta-BHC in surface soil sample SS-3 exceeded EPC Goals. The pesticide concentrations in the SS-3 composite surface and subsurface samples were non-detect or less than RRS and less than EPC Goals. The composite SS-3 Area samples were less than the previous soil concentrations. Boring SS-3 Area will not require corrective action for surface and subsurface soils.

The surface soil concentration of arsenic in surface soil sample from the well boring MW-101 exceeded EPC Goals. Arsenic was not detected in the composite surface or subsurface soil samples collected around well boring MW-101. Well boring MW-101 Area will not require corrective action for surface and subsurface soils.

3.5 Access to CSX Property

Soil, groundwater, and surface water sampling is proposed for locations on the CSX property that abuts the Estech property. The proposed sampling consists of installation of three permanent monitoring wells, soil sampling in four areas of exceedance, groundwater sampling in new and existing monitoring wells, and sampling of surface water in the un-named stream. A work plan was submitted to CSX on June 5, 2012 to request access to conduct the sampling described above. Communications have been on-going with CSX regarding the access and the proposed scope of investigation. CSX has requested the location of proposed wells MW-119 and MW-120 to be moved toward the west closer toward existing wells MW-113 and MW-114 (see Figure 1). The new proposed location will be on the west side of the un-named stream but not adjacent to the stream as originally proposed. Negotiations are also on-going regarding the constituents proposed for soil and water analysis. Work will commence upon CSX approval of the Work Plan and completion of an access agreement with CSX to conduct the investigation on their property.

4.0 WORK TO BE PERFORMED

Several of the activities currently identified in the VIRP and in the EPD February 8, 2012 letters have been completed or are in progress during this reporting period while several activities are left to be performed. These activities include obtaining access to the CSX property to conduct the proposed investigation, conducting the soil and water investigation on CSX property, and preliminary design of the remediation. The sections below describe the status of the activities yet to be performed. Figure 8 is the updated Gantt Chart Schedule of VRP Activities.

4.1 Soil and Groundwater Investigation on CSX Property

The investigation of soil and water on the CSX property is summarized below. BFEL anticipates access to be granted sometime in August and work can begin thereafter.

Monitoring Well Installations

- Drill and install new monitoring well MW-119 to 15 feet into saturated soils
- Drill and install new monitoring well MW-120 to 15 feet into bedrock
- Drill and install new monitoring well MW-121 to 15 feet into bedrock, adjacent to existing well MW-106D.

Soil borings and Soil Sampling

- Drill and sample 5 soil borings to total depth of 18 feet in Exceedance Area C (east side of Estech property). Soil samples will be analyzed for Organochlorine Pesticides, Arsenic, Copper and Zinc.
- Drill and sample 8 soil borings to total depth of 16 feet in Exceedance Area D (east side of Estech property). Soil samples will be analyzed for Organochlorine Pesticides, Arsenic, Copper and Zinc
- Drill and sample 4 soil borings to total depth of 4 feet around previous boring SB-104 (west side of Estech property). Soil samples will be analyzed for Organochlorine Pesticides and Arsenic
- Drill and sample 4 soil borings to total depth of 4 feet around previous boring SB-156 (west side of Estech property). Soil samples will be analyzed for Arsenic, Copper and Zinc

Groundwater Sampling and Analysis

The following existing and new monitoring wells located on CSX property will be sampled and analyzed for site constituents:

MW-24	MW-25	MW-104A	MW-104D	MW-105	MW-106D
MW-107D	MW-109	MW-111	MW-113	MW-114	MW-115
MW-117	MW-119 (proposed)	MW-120 (proposed)	MW-121 (proposed)		

Existing and new monitoring wells on the Estech property will also be sampled and analyzed:

MW-21	MW-22	MW-26	MW-1B	MW-101	MW-102
MW-108	MW-110	MW-112	MW-116	TW-1 to TW-12 (new)	

Constituents to be analyzed: Organochlorine Pesticides, Total and Dissolved Metals (Arsenic, Lead, Copper, Zinc), Nitrate, and Sulfate

Surface Water Sampling and Analysis

Six surface water locations in the un-named stream located on CSX property will be sampled and analyzed for the site constituents:

SW2010-5	SW2010-10	SW2010-11	SW2010-14	SW2010-15	SW2010-17

Constituents analyzed: Organochlorine Pesticides, Total and Dissolved Metals (Arsenic, Lead, Copper, Zinc), Nitrate, and Sulfate

4.2 Preliminary Design for Remediation

As part of the preliminary design for the soil and water remediation, the existing fate and transport model will be updated to include metals along with pesticides. BFEL currently is planning to conduct a pilot-test of the proposed permeable reactive barrier (PRB) near the down-gradient boundary of the Estech property to evaluate the effectiveness of the technology with the site constituents prior to testing and installing a PBR on CSX property near the stream. Hydrologic modeling will be prepared as part of the design for the Estech property pilot-test of the PRB. Prior to design and installation of the PRB, completion of the current soil and water investigation on the CSX property needs to be completed and is pending granting of access. The investigation data will be used in the selection of the location of the Estech property PRB.

5.0 PROFESSIONAL SERVICES HOURS THIS PERIOD

A total of approximately 629.1 professional service hours have been provided by AMEC Environment & Infrastructure, Inc. from February 8, 2012 to early August 2012. A table of the breakdown of AMEC hours by month along with a description of the services provided is presented on Table 5. The registered professional engineer responsible for implementation of the VRP at this site is Mr. Gregory Wrenn. Mr. Wrenn has personally charged 40 labor hours to the project to direct and review the various aspects of implementation of the VRP during this reporting period.

Name of Document: Voluntary Remediation Program Status Report No. 1 Former Estech General Chemicals Site, Atlanta, GA HSI 10196			
Document Date: August 8, 2012			
Date Submitted to EPD: August 8, 2012			
Name and Address	**Date Sent**	**Number of Copies**	**Shipping Method and Format**
Mr. David Brownlee Georgia Environmental Protection Division Hazardous Sites Response Program 2 Martin Luther King, Jr. Dr SE Suite 1462 East Atlanta, GA 30334	8/8/2012	3	Hand Delivery 1 complete paper copy 2 electronic copies on CD in PDF format
Mr. Thomas C. McGowan, Esq. McGrath North Mullin & Kratz PC LLO Suite 3700 First National Tower 1601 Dodge Street Omaha, NE 68102	8/8/2012	2	FedEx-Express Saver 1 complete paper copy 1 electronic copy on CD in PDF format
Mr. Ken Anderson Beatrice Company PO Box 3010 St. Charles, IL 60174	8/8/2012	1	US Mail-delivery receipt 1 electronic copy on CD in PDF format
Mr. Kevin Boland, P.G. CSX Transportation, Inc. 6737 Southpoint Drive South Building 1 Jacksonville, FL 32216 Attn: Corridor Occupancy Services, (J-180)	8/8/2012	1	US Mail-delivery receipt 1 electronic copy on CD in PDF format
Mr. Matthew L. Adkins, CHMM Manager Environmental Remediation CSX Transportation, Inc. 351 Thornton Road Suite 125 Lithia Springs, GA 30122	8/8/2012	1	US Mail-delivery receipt 1 electronic copy on CD in PDF format
<u>File Copy:</u> AMEC Environment & Infrastructure, Inc. 1075 Big Shanty Road Kennesaw, GA 30144		2	1 complete paper copy 1 electronic copy on CD in PDF format

TABLES

TABLE 1: SUMMARY OF SAMPLING AND ANALYSIS DATA

AREA SAMPLED	BORINGS	TOTAL BORING DEPTH (FT, BGS)	SAMPLE DEPTHS PER BORING (FT, BGS)	SAMPLE IDENTIFICATION	MEDIA	ANALYSES PER SAMPLE	SAMPLE DATE	RATIONALE FOR SAMPLING: CONSTITUENTS AND DEPTHS EXCEEDING EPC GOALS
Exceedance Area A	SB-A-1 (sw)	16	0-2	SB-A-0-2	Soil	As, Cu, Zn, Pesticides	5/22/2012	
Area encompassing MW-21,	SB-A-2	16	3-5	SB-A-3-5	Soil	As, Cu, Zn, Pesticides	5/22/2012	MW-21 Surface: Arsenic
SS-24, MW-15, and	SB-A-3 (nw)	16	6-8	SB-A-6-8	Soil	As, Cu, Zn, Pesticides	5/22/2012	SS-24 Surface: alpha-BHC, beta-BHC, Dieldrin, DDT
S-132	SB-A-4 (ne)	16	8-10	SB-A-8-10	Soil	As, Cu, Zn, Pesticides	5/22/2012	MW-15 Subsurface: Arsenic (5 ft)
	SB-A-5 (north central)	16	10-12	SB-A-10-12	Soil	As, Cu, Zn, Pesticides	5/22/2012	SB-132 Subsurface: Arsenic (15 ft)
	SB-A-6	16	12-14	SB-A-12-14	Soil	As, Cu, Zn, Pesticides	5/22/2012	
			14-16	SB-A-14-16	Soil	As, Cu, Zn, Pesticides	5/22/2012	
Exceedance Area B	SB-B-1 (ne)	12	0-2	SB-B-0-2	Soil	As, Cu, Zn, Pesticides	5/23/2012	
Area encompassing MW-12,	SB-B-2 (central east line)	12	3-5	SB-B-3-5	Soil	As, Cu, Zn, Pesticides	5/23/2012	MW-12 Surface: Arsenic Subsurface: Arsenic (10 ft)
SB-15, MW-22, MW-23,	SB-B-3 (se)	12	6-8	SB-B-6-8	Soil	As, Cu, Zn, Pesticides	5/23/2012	SB-15 Surface: Arsenic Subsurface: Arsenic (6 ft)
SB-13	SB-B-4	12	8-10	SB-B-8-10	Soil	As, Cu, Zn, Pesticides	5/23/2012	MW-23 Surface: alpha-beta-delta BHC Subsurface: Arsenic (5 ft)
	SB-B-5 (west central)	12	10-12	SB-B-10-12	Soil	As, Cu, Zn, Pesticides	5/23/2012	MW-22 Surface: Arsenic Subsurface: Arsenic (5 ft)
	SB-B-6 (sw)	12						SB-13 Subsurface: Arsenic (5 ft)
	SB-B-7 (central)	12						
Exceedance Area E	SB-E-1 (ne)	4	0-2	SB-E-0-2	Soil	Pesticide and 2,4-Dinitrotoluene	5/21/2012	
Area encompassing MW-9	SB-E-2 (se)	4	2-4	SB-E-2-4	Soil	Pesticide and 2,4-Dinitrotoluene	5/21/2012	MW-9 Surface: alpha-beta-delta BHC
and SS-14	SB-E-3 (sw)	4						SS-14 Surface: 2,4-Dinitrotoluene
	SB-E-4 (nw)	4						
	SB-E-5 (central)	4						
Exceedance Area F	SB-F-1 (nw)	4	0-2	SB-F-0-2	Soil	As, Pb, Cu, Zn, Pesticides	5/21/2012	
Area encompassing SS-17,	SB-F-2 (ne)	4	2-4	SB-F-2-4	Soil	As, Pb, Cu, Zn, Pesticides	5/21/2012	SS-17 Surface: alpha-beta-delta BHC, Arsenic
MW-13, MW-14, SS-20	SB-F-3 (se)	4						MW-13 Surface: alpha-beta-delta BHC, Arsenic
	SB-F-4 (sw)	4						MW-14 Surface: alpha-beta-delta BHC, Arsenic
	SB-F-5 (central)	4						SS-20 Surface: Lead
Exceedance Area G	SB-G-1	6	0-2	SB-G-0-2	Soil	As, Pb, Cu, Zn	5/21/2012	
Area encompassing SB-173,	SB-G-2	6	2-4	SB-G-2-4	Soil	As, Pb, Cu, Zn	5/21/2012	SB-173 Surface: Arsenic, Lead
SB-174, HA-106	SB-G-3	6	4-6	SB-G-4-6	Soil	As, Pb, Cu, Zn	5/21/2012	SB-174 Subsurface: Arsenic (5 ft)
	SB-G-4	6						HA-106
	SB-G-5	6						
Exceedance Area H	SB-H-1 (nw)	16	0-2	SB-H-1-0-2	Soil	As, Pb, Cu, Zn	5/23/2012	
Area encompassing	SB-H-2 (ne)	16	3-5	SB-H-1-3-5	Soil	As, Pb, Cu, Zn	5/23/2012	SS-07 (nus Surface: Lead
SS-07 (nus) and MW-11	SB-H-3 (se)	16	6-8	SB-H-1-6-8	Soil	As, Pb, Cu, Zn	5/23/2012	MW-11 Subsurface: Arsenic (15 ft)
	SB-H-4 (sw)	16	8-10	SB-H-1-8-10	Soil	As, Pb, Cu, Zn	5/23/2012	
	SB-H-5 (central)	16	10-12	SB-H-1-10-12	Soil	As, Pb, Cu, Zn	5/23/2012	
			14-16	SB-H-1-14-16	Soil	As, Pb, Cu, Zn	5/23/2012	
Boring SS-2 (tmg)	SB-SS2-1	4	0-2	SB-SS2-0-2	Soil	Pesticides	5/22/2012	SS-2 Surface: alpha-beta-delta BHC, DDT
	SB-SS2-2	4	2-4	SB-SS2-2-4	Soil	Pesticides	5/22/2012	
	SB-SS2-3	4						
	SB-SS2-4	4						
Boring SS-3 (tmg)	SB-SS3-1	4	0-2	SB-SS3-0-2	Soil	Pesticides	5/22/2012	SS-3 Surface: alpha-beta-delta BHC
	SB-SS3-2	4	2-4	SB-SS3-2-4	Soil	Pesticides	5/22/2012	
	SB-SS3-3	4						
	SB-SS3-4	4						
Boring/Well MW-101	SB-W101-1 (ne)	4	0-2	SB-W101-0-2	Soil	As, Cu, Zn	5/24/2012	MW-101 Surface: Arsenic
	SB-W101-2 (se)	4	2-4	SB-W101-2-4	Soil	As, Cu, Zn	5/24/2012	
	SB-W101-3 (sw)	4						
	SB-W101-4 (nw)	4						

TABLE 1: SUMMARY OF SAMPLING AND ANALYSIS DATA

AREA SAMPLED	BORINGS	TOTAL BORING DEPTH (FT, BGS)	SAMPLE DEPTHS PER BORING (FT, BGS)	SAMPLE IDENTIFICATION	MEDIA	ANALYSES PER SAMPLE	SAMPLE DATE	RATIONALE FOR SAMPLING: CONSTITUENTS AND DEPTHS EXCEEDING EPC GOALS
Boring HA-111	SB-H111-1 (ne)	8	0-2	SB-H111-0-2	Soil	As, Pb, Cu, Zn	5/24/2012	HA-111 Subsurface: Arsenic, Lead (6 ft)
	SB-H111-2 (se)	8	2-4	SB-H111-2-4	Soil	As, Pb, Cu, Zn	5/24/2012	
	SB-H111-3 (sw)	8	4-6	SB-H111-4-6	Soil	As, Pb, Cu, Zn	5/24/2012	
	SB-H111-4 (nw)	8	6-8	SB-H111-6-8	Soil	As, Pb, Cu, Zn	5/24/2012	
TW-1	TW-1	27	0-2	TW-1-0-2	Soil	Cu Zn	5/14/2012	New boring and well to investigate Copper
			8-10	TW-1-8-10	Soil	Cu Zn	5/14/2012	and Zinc in groundwater
			10-12	TW-1-10-12	Soil	Cu Zn	5/14/2012	
TW-2	TW-2	29.5	0-2	TW-2-0-2	Soil	Cu Zn	5/14/2012	New boring and well to investigate Copper
			10-12	TW-2-10-12	Soil	Cu Zn	5/14/2012	and Zinc in groundwater
			16-18	TW-2-16-18	Soil	Cu Zn	5/14/2012	
TW-3	TW-3	32.5	0-2	TW-3-0-2	Soil	Cu Zn	5/14/2012	New boring and well to investigate Copper
			10-12	TW-3-10-12	Soil	Cu Zn	5/14/2012	and Zinc in groundwater
			18-20	TW-3-18-20	Soil	Cu Zn	5/14/2012	
TW-4	TW-4	35	0-2	TW-4-0-2	Soil	Cu Zn	5/14/2012	New boring and well to investigate Copper
			10-12	TW-4-10-12	Soil	Cu Zn	5/14/2012	and Zinc in groundwater
			20-22	TW-4-20-22	Soil	Cu Zn	5/14/2012	
TW-5	TW-5	21.5	0-2	TW-5-0-2	Soil	Cu Zn	5/14/2012	New boring and well to investigate Copper
			10-12	TW-5-10-12	Soil	Cu Zn	5/14/2012	and Zinc in groundwater
			16-18	TW-5-16-18	Soil	Cu Zn	5/14/2012	
TW-6	TW-6	40	0-2	TW-6-0-2	Soil	Cu Zn	5/15/2012	New boring and well to investigate Copper
			10-12	TW-6-10-12	Soil	Cu Zn	5/15/2012	and Zinc in groundwater
			18-20	TW-6-18-20	Soil	Cu Zn	5/15/2012	
TW-7	TW-7	30	0-2	TW-7-0-2	Soil	Cu Zn	5/15/2012	New boring and well to investigate Copper
			10-12	TW-7-10-12	Soil	Cu Zn	5/15/2012	and Zinc in groundwater
TW-8	TW-8	30	0-2	TW-8-0-2	Soil	Cu Zn	5/15/2012	New boring and well to investigate Copper
			10-12	TW-8-10-12	Soil	Cu Zn	5/15/2012	and Zinc in groundwater
TW-9	TW-9	27.3	0-2	TW-9-0-2	Soil	Cu Zn	5/15/2012	New boring and well to investigate Copper
			10-12	TW-9-10-12	Soil	Cu Zn	5/15/2012	and Zinc in groundwater
			15-17	TW-9-15-17	Soil	Cu Zn	5/15/2012	
TW-10	TW-10	26	0-2	TW-10-0-2	Soil	Cu Zn	5/15/2012	New boring and well to investigate Copper
			10-12	TW-10-10-12	Soil	Cu Zn	5/15/2012	and Zinc in groundwater
			14-16	TW-10-14-16	Soil	Cu Zn	5/15/2012	
TW-11	TW-11	29.3	0-2	TW-11-0-2	Soil	Cu Zn	5/16/2012	New boring and well to investigate Copper
			14-16	TW-11-14-16	Soil	Cu Zn	5/16/2012	and Zinc in groundwater
			26-28	TW-11-26-28	Soil	Cu Zn	5/16/2012	
TW-12	TW-12	25.5	0-2	TW-12-0-2	Soil	Cu Zn	5/16/2012	New boring and well to investigate Copper
			12-14	TW-12-12-14	Soil	Cu Zn	5/16/2012	and Zinc in groundwater
			23-25	TW-12-23-25	Soil	Cu Zn	5/16/2012	

TABLE 1: SUMMARY OF SAMPLING AND ANALYSIS DATA

AREA SAMPLED	BORINGS	TOTAL BORING DEPTH (FT, BGS)	SAMPLE DEPTHS PER BORING (FT, BGS)	SAMPLE IDENTIFICATION	MEDIA	ANALYSES PER SAMPLE	SAMPLE DATE	RATIONALE FOR SAMPLING: CONSTITUENTS AND DEPTHS EXCEEDING EPC GOALS
WELL LOCATION	**WELL NUMBER**	**TOTAL WELL DEPTH (FT BGS)**	**SCREENED INTERVAL (FT, BGS)**	**SAMPLE IDENTIFICATION**	**MEDIA**	**ANALYSES**	**SAMPLE DATE**	**RATIONALE**
TW-1	Well TW-1	23.0	12.5-22.5	TW-1-053012	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/30/2012	New well to investigate Copper
				TW-1-053012	Groundwater	Pesticides	5/30/2012	and Zinc in groundwater
				TW-1-053012	Groundwater	Nitrate and Sulfate	5/30/2012	
TW-2	Well TW-2	27.5	17-27	TW-2-053012	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/30/2012	New well to investigate Copper
				TW-2-053012	Groundwater	Pesticides	5/30/2012	and Zinc in groundwater
				TW-2-053012	Groundwater	Nitrate and Sulfate	5/30/2012	
TW-3	Well TW-3	37.5	26.4-36.4	TW-3-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	New well to investigate Copper
				TW-3-053112	Groundwater	Pesticides	5/31/2012	and Zinc in groundwater
				TW-3-053112	Groundwater	Nitrate and Sulfate	5/31/2012	
TW-4	Well TW-4	32.0	21.8-31.8	TW-4-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	New well to investigate Copper
				TW-4-053112	Groundwater	Pesticides	5/31/2012	and Zinc in groundwater
				TW-4-053112	Groundwater	Nitrate and Sulfate	5/31/2012	
TW-5	Well TW-5	30.0	19.8-29.8	TW-5-053012	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/30/2012	New well to investigate Copper
				TW-5-053012	Groundwater	Pesticides	5/30/2012	and Zinc in groundwater
				TW-5-053012	Groundwater	Nitrate and Sulfate	5/30/2012	
TW-6	Well TW-6	38.5	27.7-37.7	TW-6-053012	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/30/2012	New well to investigate Copper
				TW-6-053012	Groundwater	Pesticides	5/30/2012	and Zinc in groundwater
				TW-6-053012	Groundwater	Nitrate and Sulfate	5/30/2012	
TW-7	Well TW-7	31.3	20.8-30.8	TW-7-060112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	6/1/2012	New well to investigate Copper
				TW-7-060112	Groundwater	Pesticides	6/1/2012	and Zinc in groundwater
				TW-7-060112	Groundwater	Nitrate and Sulfate	6/1/2012	
TW-8	Well TW-8	29.5	19-29	TW-8-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	New well to investigate Copper
				TW-8-053112	Groundwater	Pesticides	5/31/2012	and Zinc in groundwater
				TW-8-053112	Groundwater	Nitrate and Sulfate	5/31/2012	
TW-9	Well TW-9	34.5	23-33	TW-9-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	New well to investigate Copper
				TW-9-053112	Groundwater	Pesticides	5/31/2012	and Zinc in groundwater
				TW-9-053112	Groundwater	Nitrate and Sulfate	5/31/2012	
TW-10	Well TW-10	29.4	19.2-29.2	TW-10-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	New well to investigate Copper
				TW-10-053112	Groundwater	Pesticides	5/31/2012	and Zinc in groundwater
				TW-10-053112	Groundwater	Nitrate and Sulfate	5/31/2012	
TW-11	Well TW-11	42.0	31.8-41.8	TW-11-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	New well to investigate Copper
				TW-11-053112	Groundwater	Pesticides	5/31/2012	and Zinc in groundwater
				TW-11-053112	Groundwater	Nitrate and Sulfate	5/31/2012	
TW-12	Well TW-12	44.0	33.8-43.8	TW-12-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	New well to investigate Copper
				TW-12-053112	Groundwater	Pesticides	5/31/2012	and Zinc in groundwater
				TW-12-053112	Groundwater	Nitrate and Sulfate	5/31/2012	
Duplicate	Duplicate of TW-8	na	na	Dup-1-053112	Groundwater	Total and Dissolved As, Cu, Pb, and Zn	5/31/2012	Field QA/QC sample
				Dup-1-053112	Groundwater	Pesticides	5/31/2012	
				Dup-1-053112	Groundwater	Nitrate and Sulfate	5/31/2012	

Notes:

Arsenic, Lead, Copper, and Zinc analyzed using USEPA Method 6020
Pesticides analyzed using USEPA Method 8081A
Nitrate and Sulfate analyzed using USEPA Method 9056
Soil samples were composited based on depth. An aliquote from each boring in the soil exceedance block was compositied into one sample that was submitted to the laboratory.
bgs = below ground surface
na = not applicable
ft = feet
nus = Sample collected by NUS Corporation in 1988
tmg = Sample collected by TM Gates & Associates in 1984
As = arsenic, Sb = antimony, Ba = barium, Cu = copper, Pb = lead, Ni = nickel, Ag = silver, Tl = thallium, Zn = zinc
ne = northeast corner of area block, se = southeast corner of area block, sw = southwest corner of area block, nw = northwest corner of area block
EPC = Exposure Point Concentration

Prepared by: R. Quinn 7-21-2012
Checked by: T. Parker 7-26-2012

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**SB-A**	**SB-A**	**SB-A**	**SB-A**	**SB-A**	**SB-A**	**SB-A**	**SB-B**	**SB-B**
Sample Depth (ft, bgs)	**0-2**	**3-5**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**0-2**	**3-5**
Sample Date	**05/22/12**	**05/22/12**	**05/22/12**	**05/22/12**	**05/22/12**	**05/22/12**	**05/22/12**	**05/23/12**	**05/23/12**
Semi-Volatile Organics mg/kg									
2,4-Dinitrotoluene	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides mg/kg									
4,4´-DDD	**0.44**	**0.14**	<0.0041	**0.0043**	<0.0041	<0.0040	**0.11**	**18**	**1.4**
4,4´-DDE	**0.46**	<0.079	<0.0041	**0.011**	**0.010**	**0.0061**	**0.20**	**0.90**	**0.15**
4,4´-DDT	**4.0**	**1.9**	**0.021**	**0.043**	**0.028**	**0.018**	**0.85**	**260**	**7.1**
alpha-BHC	**0.043**	**0.069**	**0.0053**	**0.15**	<0.0021	<0.0020	**0.027**	**0.28**	**0.065**
alpha-Chlordane	**0.041**	<0.040	<0.0021	<0.0021	<0.0021	<0.0020	**0.020**	**0.18**	**0.054**
beta-BHC	**0.530**	**0.62**	**0.015**	**0.073**	**0.0043**	**0.0063**	**0.30**	**3.0**	**0.57**
delta-BHC	<0.039	<0.040	**0.0034**	**0.069**	<0.0021	<0.0020	**0.028**	**0.73**	<0.043
Dieldrin	**0.20**	<0.079	<0.0041	**0.017**	**0.0058**	<0.0040	**0.35**	**0.55**	**0.23**
gamma-BHC	<0.039	<0.040	**0.0025**	**0.099**	<0.0021	<0.0020	**0.021**	**0.19**	<0.043
gamma-Chlordane	**0.15**	<0.040	<0.0021	**0.0028**	**0.0031**	<0.0020	**0.11**	**0.56**	**0.17**
Heptachlor	<0.039	<0.040	<0.0021	<0.0021	<0.0021	<0.0020	**0.034**	**1.3**	**0.055**
Methoxychlor	<0.39	<0.40	<0.021	<0.021	<0.021	<0.020	<0.10	<0.42	<0.43
Toxaphene	<3.9	<4.0	<0.21	<0.21	<0.21	<0.20	**1.0**	**8.1**	<4.3
Metals mg/kg									
Arsenic	**95.8**	**157**	**231**	**392**	<92	<88.9	<88.5	**1500**	**305**
Copper	**162**	**159**	**210**	**126**	**91**	**61.8**	**52.5**	**299**	**241**
Lead	na	na	na	na	na	na	na	na	na
Zinc	**222**	**278**	**181**	**125**	**61.3**	**62**	**77.4**	**328**	**330**

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**SB-B**	**SB-B**	**SB-B**	**SB-E**	**SB-E**	**SB-F**	**SB-F**	**SB-G**	**SB-G**
Sample Depth (ft, bgs)	**6-8**	**8-10**	**10-12**	**0-2**	**2-4**	**0-2**	**2-4**	**0-2**	**2-4**
Sample Date	**05/23/12**	**05/23/12**	**05/23/12**	**05/21/12**	**05/21/12**	**05/21/12**	**05/21/12**	**05/21/12**	**05/21/12**
Semi-Volatile Organics mg/kg									
2,4-Dinitrotoluene	na	na	na	<0.38	0.53	na	na	na	na
Organochlorine Pesticides mg/kg									
4,4´-DDD	<0.084	**0.24**	**2.4**	**2.4**	**14**	**0.42**	**7.6**	na	na
4,4´-DDE	<0.084	<0.085	**0.16**	**1.5**	**3.3**	**0.22**	**1.1**	na	na
4,4´-DDT	**0.13**	**2.4**	**20**	**46**	**24**	**4.2**	**82**	na	na
alpha-BHC	<0.042	<0.042	**0.07**	**0.32**	**0.91**	<0.041	**0.28**	na	na
alpha-Chlordane	<0.042	<0.042	<0.043	**4.1**	**0.28**	<0.041	**0.33**	na	na
beta-BHC	<0.042	**0.30**	**2.9**	**8.8**	**2.2**	**0.32**	**11**	na	na
delta-BHC	<0.042	**0.22**	**0.69**	**0.16**	**0.35**	<0.041	**0.41**	na	na
Dieldrin	<0.084	<0.085	**0.18**	**3.6**	**0.36**	**0.14**	**6.4**	na	na
gamma-BHC	<0.042	<0.042	<0.043	**0.13**	**0.28**	<0.041	**0.28**	na	na
gamma-Chlordane	<0.042	<0.042	**0.10**	**4.6**	**0.69**	**0.094**	**1.6**	na	na
Heptachlor	<0.042	**0.12**	**0.32**	**7.5**	**0.47**	**0.041**	**3.6**	na	na
Methoxychlor	<0.42	<0.42	<0.43	<0.38	<0.41	<0.41	<0.42	na	na
Toxaphene	<4.2	<4.2	<4.3	**17**	**17**	<4.1	**24**	na	na
Metals mg/kg									
Arsenic	**161**	<91.7	**119**	na	na	**133**	**161**	**210**	**195**
Copper	**504**	**247**	**270**	na	na	**203**	**322**	**531**	**522**
Lead	na	na	na	na	na	**1560**	**1790**	**4350**	**4150**
Zinc	**308**	**522**	**276**	na	na	**248**	**402**	**419**	**552**

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**SB-G**	**SB-H**	**SB-H**	**SB-H**	**SB-H**	**SB-H**	**SB-H**	**SB-H111**	**SB-H111**
Sample Depth (ft, bgs)	**4-6**	**0-2**	**3-5**	**6-8**	**8-10**	**10-12**	**14-16**	**0-2**	**2-4**
Sample Date	**05/21/12**	**05/23/12**	**05/23/12**	**05/23/12**	**05/23/12**	**05/23/12**	**05/23/12**	**05/24/12**	**05/24/12**
Semi-Volatile Organics mg/kg									
2,4-Dinitrotoluene	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides mg/kg									
4,4´-DDD	na	na	na	na	na	na	na	na	na
4,4´-DDE	na	na	na	na	na	na	na	na	na
4,4´-DDT	na	na	na	na	na	na	na	na	na
alpha-BHC	na	na	na	na	na	na	na	na	na
alpha-Chlordane	na	na	na	na	na	na	na	na	na
beta-BHC	na	na	na	na	na	na	na	na	na
delta-BHC	na	na	na	na	na	na	na	na	na
Dieldrin	na	na	na	na	na	na	na	na	na
gamma-BHC	na	na	na	na	na	na	na	na	na
gamma-Chlordane	na	na	na	na	na	na	na	na	na
Heptachlor	na	na	na	na	na	na	na	na	na
Methoxychlor	na	na	na	na	na	na	na	na	na
Toxaphene	na	na	na	na	na	na	na	na	na
Metals mg/kg									
Arsenic	**108**	**202**	**256**	**134**	**193**	**195**	**114**	<87	<81.2
Copper	**51.9**	**511**	**354**	**186**	**386**	**493**	**274**	**56.6**	**61.4**
Lead	**33.2**	**3920**	**3550**	**803**	**2020**	**2500**	**1530**	**2490**	**4870**
Zinc	**52.4**	**662**	**409**	**427**	**439**	**963**	**702**	**117**	**178**

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**SB-H111**	**SB-H111**	**SB-W101**	**SB-W101**	**SB-SS2**	**SB-SS2**	**SB-SS3**	**SB-SS3**	**TW-1**
Sample Depth (ft, bgs)	**4-6**	**6-8**	**0-2**	**2-4**	**0-2**	**2-4**	**0-2**	**2-4**	**0-2**
Sample Date	**05/24/12**	**05/24/12**	**05/24/12**	**05/24/12**	**05/22/12**	**05/22/12**	**05/22/12**	**05/22/12**	**05/14/12**
Semi-Volatile Organics mg/kg									
2,4-Dinitrotoluene	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides mg/kg									
4,4´-DDD	na	na	na	na	**0.14**	<0.0041	<0.073	<0.0036	na
4,4´-DDE	na	na	na	na	**0.38**	**0.010**	<0.073	<0.0036	na
4,4´-DDT	na	na	na	na	**1.5**	<0.0041	**0.19**	**0.0079**	na
alpha-BHC	na	na	na	na	**0.093**	<0.0021	<0.036	<0.0018	na
alpha-Chlordane	na	na	na	na	<0.019	<0.0021	<0.036	<0.0018	na
beta-BHC	na	na	na	na	**1.4**	**0.024**	<0.036	<0.0018	na
delta-BHC	na	na	na	na	**0.026**	<0.0021	<0.036	<0.0018	na
Dieldrin	na	na	na	na	**0.16**	**0.013**	<0.073	**0.0041**	na
gamma-BHC	na	na	na	na	**0.054**	<0.0021	<0.036	<0.0018	na
gamma-Chlordane	na	na	na	na	**0.029**	<0.0021	<0.036	**0.0021**	na
Heptachlor	na	na	na	na	<0.019	<0.0021	<0.036	<0.0018	na
Methoxychlor	na	na	na	na	<0.19	<0.021	<0.36	<0.018	na
Toxaphene	na	na	na	na	**2.3**	<0.21	<3.6	<0.18	na
Metals mg/kg									
Arsenic	<84.2	<81	<88.6	<88.2	na	na	na	na	na
Copper	**40.4**	**12.4**	**61.9**	**163**	na	na	na	na	**119**
Lead	**1710**	**129**	na	na	na	na	na	na	na
Zinc	**108**	**48.0**	**123**	**294**	na	na	na	na	**119**

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**TW-1**	**TW-1**	**TW-2**	**TW-2**	**TW-2**	**TW-3**	**TW-3**	**TW-3**	**TW-4**
Sample Depth (ft, bgs)	**8-10**	**10-12**	**0-2**	**10-12**	**16-18**	**0-2**	**10-12**	**18-20**	**0-2**
Sample Date	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**
Semi-Volatile Organics mg/kg									
2,4-Dinitrotoluene	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides mg/kg									
4,4´-DDD	na	na	na	na	na	na	na	na	na
4,4´-DDE	na	na	na	na	na	na	na	na	na
4,4´-DDT	na	na	na	na	na	na	na	na	na
alpha-BHC	na	na	na	na	na	na	na	na	na
alpha-Chlordane	na	na	na	na	na	na	na	na	na
beta-BHC	na	na	na	na	na	na	na	na	na
delta-BHC	na	na	na	na	na	na	na	na	na
Dieldrin	na	na	na	na	na	na	na	na	na
gamma-BHC	na	na	na	na	na	na	na	na	na
gamma-Chlordane	na	na	na	na	na	na	na	na	na
Heptachlor	na	na	na	na	na	na	na	na	na
Methoxychlor	na	na	na	na	na	na	na	na	na
Toxaphene	na	na	na	na	na	na	na	na	na
Metals mg/kg									
Arsenic	na	na	na	na	na	na	na	na	na
Copper	**30.1**	**15.2**	**73.6**	**54.1**	**37**	**364**	**81.2**	**68.8**	**136.2**
Lead	na	na	na	na	na	na	na	na	na
Zinc	**96.2**	**98**	**57.9**	**52.4**	**63**	**367**	**37.1**	**50.4**	**386.1**

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**TW-4**	**TW-4**	**TW-5**	**TW-5**	**TW-5**	**TW-6**	**TW-6**	**TW-6**	**TW-7**
Sample Depth (ft, bgs)	**10-12**	**20-22**	**0-2**	**10-12**	**16-18**	**0-2**	**10-12**	**18-20**	**0-2**
Sample Date	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**	**05/14/12**	**05/15/12**	**05/15/12**	**05/15/12**	**05/15/12**
Semi-Volatile Organics mg/kg									
2,4-Dinitrotoluene	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides mg/kg									
4,4´-DDD	na	na	na	na	na	na	na	na	na
4,4´-DDE	na	na	na	na	na	na	na	na	na
4,4´-DDT	na	na	na	na	na	na	na	na	na
alpha-BHC	na	na	na	na	na	na	na	na	na
alpha-Chlordane	na	na	na	na	na	na	na	na	na
beta-BHC	na	na	na	na	na	na	na	na	na
delta-BHC	na	na	na	na	na	na	na	na	na
Dieldrin	na	na	na	na	na	na	na	na	na
gamma-BHC	na	na	na	na	na	na	na	na	na
gamma-Chlordane	na	na	na	na	na	na	na	na	na
Heptachlor	na	na	na	na	na	na	na	na	na
Methoxychlor	na	na	na	na	na	na	na	na	na
Toxaphene	na	na	na	na	na	na	na	na	na
Metals mg/kg									
Arsenic	na	na	na	na	na	na	na	na	na
Copper	**25.8**	**46.8**	**26.4**	**284**	**33.2**	**70.4**	**41.9**	**262**	**14**
Lead	na	na	na	na	na	na	na	na	na
Zinc	**29.4**	**116**	**130**	**76.8**	**62.6**	**191**	**210**	**1810**	**69.6**

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**TW-7**	**TW-8**	**TW-8**	**TW-9**	**TW-9**	**TW-9**	**TW-10**	**TW-10**	**TW-10**
Sample Depth (ft, bgs)	**10-12**	**0-2**	**10-12**	**0-2**	**10-12**	**15-17**	**0-2**	**10-12**	**14-16**
Sample Date	**05/15/12**	**05/15/12**	**05/15/12**	**05/15/12**	**05/15/12**	**05/15/12**	**05/15/12**	**05/15/12**	**05/15/12**
Semi-Volatile Organics mg/kg									
2,4-Dinitrotoluene	na	na	na	na	na	na	na	na	na
Organochlorine Pesticides mg/kg									
4,4´-DDD	na	na	na	na	na	na	na	na	na
4,4´-DDE	na	na	na	na	na	na	na	na	na
4,4´-DDT	na	na	na	na	na	na	na	na	na
alpha-BHC	na	na	na	na	na	na	na	na	na
alpha-Chlordane	na	na	na	na	na	na	na	na	na
beta-BHC	na	na	na	na	na	na	na	na	na
delta-BHC	na	na	na	na	na	na	na	na	na
Dieldrin	na	na	na	na	na	na	na	na	na
gamma-BHC	na	na	na	na	na	na	na	na	na
gamma-Chlordane	na	na	na	na	na	na	na	na	na
Heptachlor	na	na	na	na	na	na	na	na	na
Methoxychlor	na	na	na	na	na	na	na	na	na
Toxaphene	na	na	na	na	na	na	na	na	na
Metals mg/kg									
Arsenic	na	na	na	na	na	na	na	na	na
Copper	**15.8**	**34**	**21.9**	**19.9**	**25.3**	**26.2**	**10.1**	**66.9**	**113**
Lead	na	na	na	na	na	na	na	na	na
Zinc	**188**	**445**	**276**	**86.9**	**226**	**42.6**	**146**	**146**	**122**

TABLE 2: SUMMARY OF SOIL ANALYTICAL RESULTS

Boring Number	**TW-11**	**TW-11**	**TW-11**	**TW-12**	**TW-12**	**TW-12**
Sample Depth (ft, bgs)	**0-2**	**14-16**	**26-28**	**0-2**	**12-14**	**23-25**
Sample Date	**05/16/12**	**05/16/12**	**05/16/12**	**05/16/12**	**05/16/12**	**05/16/12**
Semi-Volatile Organics mg/kg						
2,4-Dinitrotoluene	na	na	na	na	na	na
Organochlorine Pesticides mg/kg						
4,4´-DDD	na	na	na	na	na	na
4,4´-DDE	na	na	na	na	na	na
4,4´-DDT	na	na	na	na	na	na
alpha-BHC	na	na	na	na	na	na
alpha-Chlordane	na	na	na	na	na	na
beta-BHC	na	na	na	na	na	na
delta-BHC	na	na	na	na	na	na
Dieldrin	na	na	na	na	na	na
gamma-BHC	na	na	na	na	na	na
gamma-Chlordane	na	na	na	na	na	na
Heptachlor	na	na	na	na	na	na
Methoxychlor	na	na	na	na	na	na
Toxaphene	na	na	na	na	na	na
Metals mg/kg						
Arsenic	na	na	na	na	na	na
Copper	**67.3**	**71.2**	**34.7**	**4.12**	**0.55**	**1.64**
Lead	na	na	na	na	na	na
Zinc	**44.9**	**57.1**	**42.2**	**35.4**	**15.8**	**13.8**

Notes:
na = constituent not analyzed
<0.002 = constituent not detected above laboratory quantitation limit
Bolded concentrations indicate detection above laboratory quantitation limit

Prepared by: RNQ 7/22/2012
Checked by: T. Parker 7/25/2012

TABLE 3: SUMMARY of SOIL SPLP RESULTS for COPPER and ZINC

Calculation:		(A)	(B)	(C) = [(A)/(B)]
Sample Identification and Sample Depth in feet	**Soil pH (standard units)**	**Total Copper Concentrations (mg/kg)**	**SPLP Copper Concentrations (mg/L)**	**Kd Values Copper (L/kg)**
TW-7-10-12	na	15.8	0.0213	742
TW-10-14-16	na	113	0.148	764
SB-A-3-5	na	159	<0.002	79500
SB-B-8-10	na	247	0.0517	4778
TW-6-18-20	5.44	262	0.0126	20794
TW-5-10-12	4.36	284	0.362	785
SB-H-10-12	4.78	493	0.11	4482
SB-H-0-2	na	511	0.0112	45625
SB-G-2-4	4.97	522	0.0254	20551
Geometric Mean		207		6259

Calculation:		(A)	(B)	(C) = [(A)/(B)]
Sample Identification and Sample Depth in feet	**Soil pH (standard units)**	**Total Zinc Concentrations (mg/kg)**	**SPLP Zinc Concentrations (mg/L)**	**Kd Values Zinc (L/kg)**
TW-5-10-12	4.36	76.8	0.159	483
TW-10-14-16	na	122	0.793	154
TW-7-10-12	na	188	<0.01	18800
SB-A-3-5	na	278	0.0789	3523
SB-B-8-10	na	522	0.998	523
SB-G-2-4	4.97	552	0.646	854
SB-H-0-2	na	662	0.0134	49403
SB-H-10-12	4.78	963	7.22	133
TW-6-18-20	5.44	1810	1.63	1110
Geometric Mean		379		1362

Notes:

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
L/kg = liter per kilogram
na = not analyzed

Prepared by: R Quinn 7/23/12
Checked by: T. Parker 7/25/12

TABLE 4 SUMMARY of GROUNDWATER ANALYTICAL RESULTS

Well Number	**TW-1**	**TW-2**	**TW-3**	**TW-4**	**TW-5**	**TW-6**	**TW-7**
Sample Date	**05/30/12**	**05/30/12**	**05/31/12**	**05/31/12**	**05/30/12**	**05/30/12**	**06/01/12**
Metals mg/L							
Total Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
Total Copper	<0.002	<0.002	**1.09**	**0.139**	**0.865**	**0.195**	**95.0**
Total Lead	<0.001	<0.001	**0.00266**	<0.001	**0.00292**	<0.001	**0.0391**
Total Zinc	**0.178**	**0.0109**	**2.14**	**0.902**	**13.7**	**0.790**	**226**
Dissolved Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.100
Dissolved Copper	<0.002	<0.002	**1.01**	**0.128**	**0.751**	**0.163**	**88.4**
Dissolved Lead	<0.001	<0.001	**0.00175**	<0.001	<0.001	<0.001	**0.0404**
Dissolved Zinc	**0.180**	<0.01	**2.00**	**0.847**	**8.60**	**0.788**	**237**
Inorganics mg/L							
Nitrate	<0.25	**4.3**	**9.5**	<1.2	**30**	**74**	**140**
Sulfate	**60**	**68**	**550**	**160**	**430**	**440**	**2900**
Organochlorine Pesticides mg/L							
4,4´-DDD	**0.00042**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
4,4´-DDE	**0.00050**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
4,4´-DDT	**0.00049**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
alpha-BHC	**0.0037**	**0.000070**	**0.00063**	**0.00012**	**0.00021**	**0.00013**	**0.00029**
alpha-Chlordane	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
beta-BHC	**0.0087**	**0.00014**	**0.0010**	**0.014**	**0.00042**	**0.0011**	**0.0013**
delta-BHC	**0.00047**	**0.000057**	**0.00027**	**0.00092**	**0.00026**	<0.00005	**0.00017**
Dieldrin	<0.0001	<0.0001	<0.0001	**0.00021**	<0.0001	<0.0001	<0.0001
gamma-BHC	**0.00030**	<0.00005	**0.00026**	**0.00013**	**0.00023**	**0.000066**	**0.00029**
gamma-Chlordane	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Heptachlor	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Methoxychlor	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toxaphene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

TABLE 4 SUMMARY of GROUNDWATER ANALYTICAL RESULTS

Well Number	**TW-8**	**TW-9**	**TW-10**	**TW-11**	**TW-12**
Sample Date	**05/31/12**	**05/31/12**	**05/31/12**	**05/31/12**	**05/31/12**
Metals mg/L					
Total Arsenic	**0.101**	<0.005	<0.005	<0.005	<0.005
Total Copper	**0.0668**	**0.0168**	**6.98**	**0.132**	**0.00291**
Total Lead	<0.001	<0.001	**0.00271**	**0.00252**	<0.001
Total Zinc	**4.43**	**1.26**	**9.24**	**0.738**	**0.0715**
Dissolved Arsenic	**0.0174**	<0.005	<0.005	<0.005	<0.005
Dissolved Copper	**0.0278**	**0.0158**	**6.43**	**0.121**	<0.002
Dissolved Lead	<0.001	<0.001	**0.00228**	**0.00212**	<0.001
Dissolved Zinc	**4.16**	**1.18**	**8.66**	**0.688**	**0.0529**
Inorganics mg/L					
Nitrate	<2.5	**0.49**	**2.9**	**3.7**	**2.7**
Sulfate	**750**	**170**	**490**	**170**	**67**
Organochlorine Pesticides mg/L					
4,4´-DDD	<0.01	<0.0001	<0.0001	<0.0001	<0.0001
4,4´-DDE	<0.01	<0.0001	<0.0001	<0.0001	<0.0001
4,4´-DDT	<0.01	<0.0001	<0.0001	<0.0001	<0.0001
alpha-BHC	**0.64**	**0.0074**	**0.000091**	<0.00005	<0.00005
alpha-Chlordane	<0.005	<0.00005	<0.00005	<0.00005	<0.00005
beta-BHC	**0.11**	**0.0054**	<0.00005	<0.00005	<0.00005
delta-BHC	**1.6**	**0.0043**	**0.00023**	<0.00005	<0.00005
Dieldrin	<0.01	**0.00010**	<0.0001	<0.0001	<0.0001
gamma-BHC	**1.3**	**0.0011**	**0.00012**	<0.00005	<0.00005
gamma-Chlordane	<0.005	<0.00005	<0.00005	<0.00005	<0.00005
Heptachlor	**0.041**	<0.00005	<0.00005	<0.00005	<0.00005
Methoxychlor	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
Toxaphene	<0.5	<0.005	<0.005	<0.005	<0.005

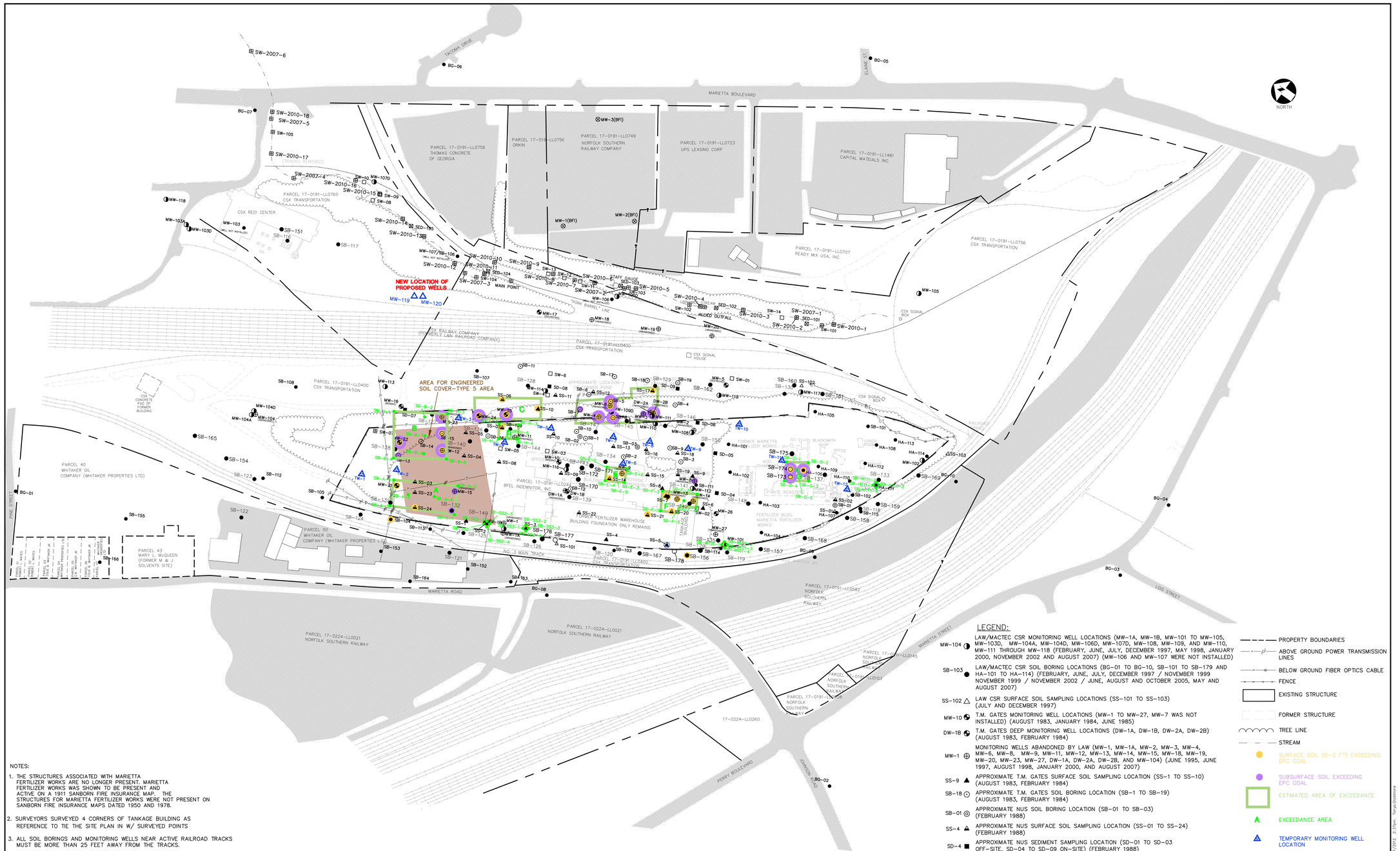
Notes:
<0.00005 = constituent not detected above laboratory quantitation limit
Bolded concentrations indicate detection above laboratory quantitation limit

Prepared by: RNQ 7/22/2012
Checked by: T. Parker 7/25/2012

TABLE 5: SUMMARY OF HOURS INVOICED AND DESCRIPTION OF SERVICES FOR DOCUMENTATION OF PE DIRECT OVERSIGHT FOR VOLUNTARY REMEDIATION PROGRAM ACTIVITIES

	Hours Invoiced	Billing Period	Invoice #	Description of Services
Gregory J. Wrenn, P.E.	3	12/17/11-2/17/12	H02100092	Review of EPD February 8, 2012 letters, planning VRP implementation, review of deed affidavit, preparation of site description for prospective purchasers.
Total Project Hours for Billing Period	8.8			
Gregory J. Wrenn, P.E.	2	2/18/12-3/16/12	H02100141	Planning VRP implementation and general project management.
Total Project Hours for Billing Period	12			
Gregory J. Wrenn, P.E.	13	3/17/12-4/20/12	H02100224	Client project review meeting, submittal of financial assurance to EPD for VRP implementation, compile data for prospective purchasers, preparation for VRP implementation field work (work plans, health & safety plan, procurement) and project management.
Total Project Hours for Billing Period	53.3			
Gregory J. Wrenn, P.E.	2	4/21/12-5/18/12	H02100280	Preparation of access request/work plan for investigation on CSX Property, oversight of site clearing activities for drilling access, surveying previous sampling locations and layout of soil sampling blocks, oversight of soil boring and temporary well installation with soil and groundwater sampling.
Total Project Hours for Billing Period	156.6			
Gregory J. Wrenn, P.E.	11	5/19/12-6/15/12	H02100307	Field coordination, oversight of field activities, and project management, submittal of request for access to CSX, conduct soil/groundwater sampling on BFEL property.
Total Project Hours for Billing Period	256.2			
Gregory J. Wrenn, P.E.	9	6/16/12-7/20/12	H02100404	Project management, communications with CSX, review of preliminary analytical results, meeting with client.
Total Project Hours for Billing Period	142.2			
Total Hours for PE Gregory J. Wrenn	**40**			
Total Project Hours	**629.1**			

FIGURES



NOTES:

1. THE STRUCTURES ASSOCIATED WITH MARIETTA FERTILIZER WORKS ARE NO LONGER PRESENT. MARIETTA FERTILIZER WORKS WAS SHOWN TO BE PRESENT AND ACTIVE ON A 1911 SANBORN FIRE INSURANCE MAP. THE STRUCTURES FOR MARIETTA FERTILIZER WORKS WERE NOT PRESENT ON SANBORN FIRE INSURANCE MAPS DATED 1950 AND 1978.
2. SURVEYORS SURVEYED 4 CORNERS OF TANKAGE BUILDING AS REFERENCE TO TIE THE SITE PLAN IN W/ SURVEYED POINTS
3. ALL SOIL BORINGS AND MONITORING WELLS NEAR ACTIVE RAILROAD TRACKS MUST BE MORE THAN 25 FEET AWAY FROM THE TRACKS.

SOURCES:

1. T.M. GATES REPORTS 1986
2. NUS CORPORATION SITE INVESTIGATION REPORT, AUGUST 1988.
3. TOPOGRAPHIC SURVEY MAP PREPARED FOR BFEL BY TRAVIS PRUITT AND ASSOCIATES, DECEMBER 19, 1989.
4. AERIAL PHOTOGRAPH AND COMPOSITE PLAT BY BLUE RIDGE ENGINEERING, DECEMBER 10, 1996.
5. BOUNDARY SURVEY BY W.L. JORDEN AND COMPANY, APRIL 2, 1997. LAW CSR SOIL BORINGS AND MONITORING WELLS SURVEYED BY W.L. JORDEN IN 1997, 1998, 1999, AND 2000.
6. MARIETTA FERTILIZER WORKS STRUCTURES FROM SANBORN FIRE INSURANCE MAP 1911.
7. MACTEC/LAW CSR SOIL BORINGS AND MONITORING WELLS (2002–2007) AND SURFACE WATER LOCATIONS SURVEYED BY MACTEC ENGINEERING AND CONSULTING INC.
8. PROPERTY OWNERS SHOWN ARE BASED ON 1996 FULTON COUNTY TAX RECORDS
9. WHITAKER AND MARY L. McQUEEN PROPERTY BOUNDARIES WERE REVISED AND ARE APPROXIMATE AND ARE BASED ON FULTON COUNTY BOARD OF ASSESSORS RECORDS 2004–2005 AT www.fultonassessor.org

CADD NOTE: DRAWING XREFS ROTATED @ 0,0; 55' FROM SURVEY FILE COORDINATE POSITION.

LEGEND:

MW-104	LAW/MACTEC CSR MONITORING WELL LOCATIONS (MW-1A, MW-1B, MW-101 TO MW-105, MW-103D, MW-104A, MW-104D, MW-106D, MW-107D, MW-108, MW-109, AND MW-110, MW-111 THROUGH MW-118 (FEBRUARY, JUNE, JULY, DECEMBER 1997, MAY 1998, JANUARY 2000, NOVEMBER 2002 AND AUGUST 2007) (MW-106 AND MW-107 WERE NOT INSTALLED)
SB-103	LAW/MACTEC CSR SOIL BORING LOCATIONS (BG-01 TO BG-10, SB-101 TO SB-179 AND HA-101 TO HA-114) (FEBRUARY, JUNE, JULY, DECEMBER 1997 / NOVEMBER 1999 NOVEMBER 1999 / NOVEMBER 2002 / JUNE, AUGUST AND OCTOBER 2005, MAY AND AUGUST 2007)
SS-102	LAW CSR SURFACE SOIL SAMPLING LOCATIONS (SS-101 TO SS-103) (JULY AND DECEMBER 1997)
MW-10	T.M. GATES MONITORING WELL LOCATIONS (MW-1 TO MW-27, MW-7 WAS NOT INSTALLED) (AUGUST 1983, JANUARY 1984, JUNE 1985)
DW-1B	T.M. GATES DEEP MONITORING WELL LOCATIONS (DW-1A, DW-1B, DW-2A, DW-2B) (AUGUST 1983, FEBRUARY 1984)
MW-1	MONITORING WELLS ABANDONED BY LAW (MW-1, MW-1A, MW-2, MW-3, MW-4, MW-6, MW-8, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-18, MW-19, MW-20, MW-23, MW-27, DW-1A, DW-2A, DW-2B, AND MW-104) (JUNE 1995, JUNE 1997, AUGUST 1998, JANUARY 2000, AND AUGUST 2007)
SS-9	APPROXIMATE T.M. GATES SURFACE SOIL SAMPLING LOCATION (SS-1 TO SS-10) (AUGUST 1983, FEBRUARY 1984)
SB-18	APPROXIMATE T.M. GATES SOIL BORING LOCATION (SB-1 TO SB-19) (AUGUST 1983, FEBRUARY 1984)
SB-01	APPROXIMATE NUS SOIL BORING LOCATION (SB-01 TO SB-03) (FEBRUARY 1988)
SS-4	APPROXIMATE NUS SURFACE SOIL SAMPLING LOCATION (SS-01 TO SS-24) (FEBRUARY 1988)
SD-4	APPROXIMATE NUS SEDIMENT SAMPLING LOCATION (SD-01 TO SD-03 OFF-SITE, SD-04 TO SD-09 ON-SITE) (FEBRUARY 1988)
SW-4	APPROXIMATE T.M. GATES SURFACE WATER SAMPLING LOCATION (SW-01 TO SW-14 ON-SITE, SW-15 TO SW-17 OFF-SITE) (APRIL 1985)
	STAFF GAUGE
SED-101	MACTEC SEDIMENT SAMPLING LOCATION (SED-101 TO SED-105 AND APPROXIMATE LOCATION OF MAIN POINT) (JANUARY 2000 AND MAY 2004)
SW-2007-1	MACTEC SURFACE WATER SAMPLING LOCATION (SW-101 TO SW-105 (NOVEMBER 2002), (MAIN POINT AND ALLIED OUTFALL MAY 2004), (SW-2007-1 TO SW-2007-6 AUGUST 2007), AND (SW-2010-1 TO SW-2010-18 SEPTEMBER 2010).
MW-1(BFI)	APPROXIMATE LOCATION OF 1993 MONITORING WELLS INSTALLED BY BFI FOR PHASE II INVESTIGATION.

PROPERTY BOUNDARIES
ABOVE GROUND POWER TRANSMISSION LINES
BELOW GROUND FIBER OPTICS CABLE
FENCE
EXISTING STRUCTURE
FORMER STRUCTURE
TREE LINE
STREAM
SURFACE SOIL (0–2 FT) EXCEEDING EPC GOAL
SUBSURFACE SOIL EXCEEDING EPC GOAL
ESTIMATED AREA OF EXCEEDANCE
A EXCEEDANCE AREA
TEMPORARY MONITORING WELL LOCATION

SEE TABLE 1 FOR DESCRIPTION OF SOIL SAMPLING PROGRAM

SCALE IN FEET
0 100 200

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REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED R. QUINN
DRAWN T. GLADSTONE
CHECKED G. WRENN
IN CHARGE L. NEAL
DATE 7/24/2012

FORMER ESTECH GENERAL CHEMICALS SITE
ATLANTA, GEORGIA

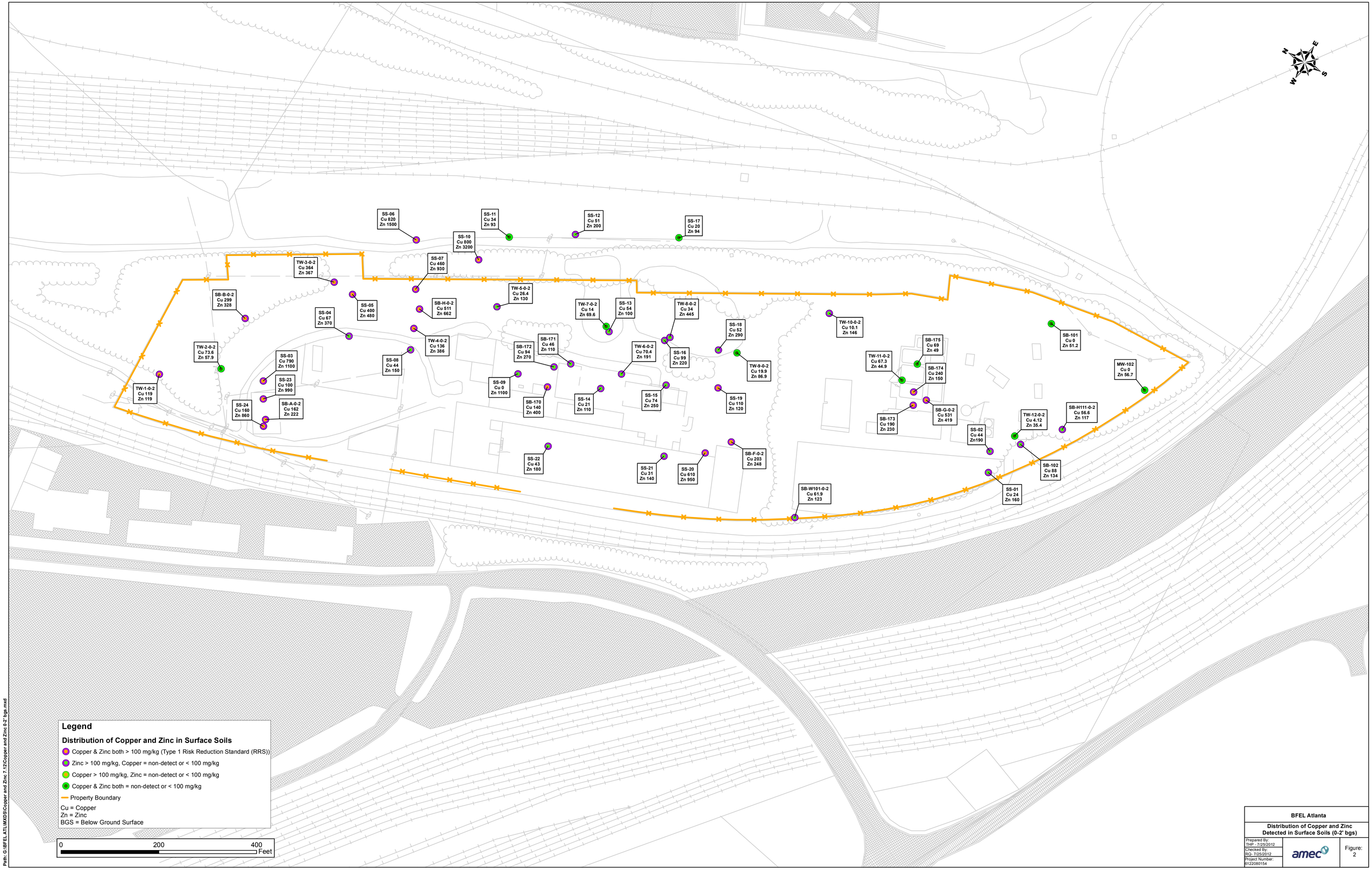
amec

Environment & Infrastructure, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

SOIL AND GROUNDWATER SAMPLING LOCATIONS

SCALE AS SHOWN
CONTRACT 6122-08-0154
DWG. NO. 1 REV PAGE NO.

L:\BFEL ATLANTA\MAY 2012\SOIL AND GW SAMP 1DC.dwg - Layout1 08/07/2012 2:37pm Tonya Gladstone



Path: G:\BFEL ATL\MXDS\Copper and Zinc 7.12\Copper and Zinc 0-2' bgs.mxd

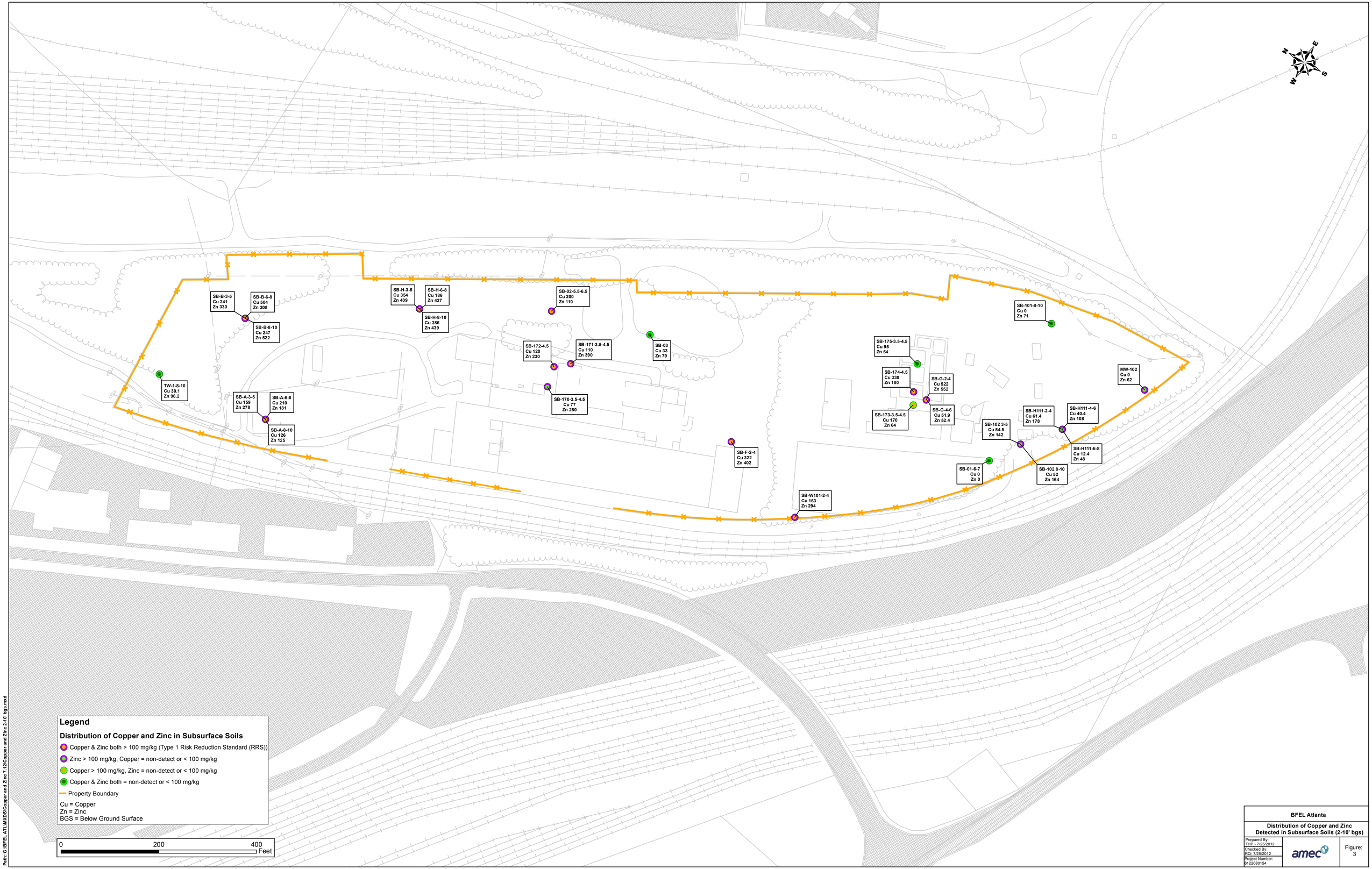
BFEL Atlanta

Distribution of Copper and Zinc Detected in Surface Soils (0-2' bgs)

Prepared By: THP - 7/25/2012
Checked By: RQ- 7/25/2012
Project Number: 6122080154

amec

Figure: 2



Path: G:\BFEL ATL\MXDS\Copper and Zinc 7.12\Copper and Zinc 2-10' bgs.mxd

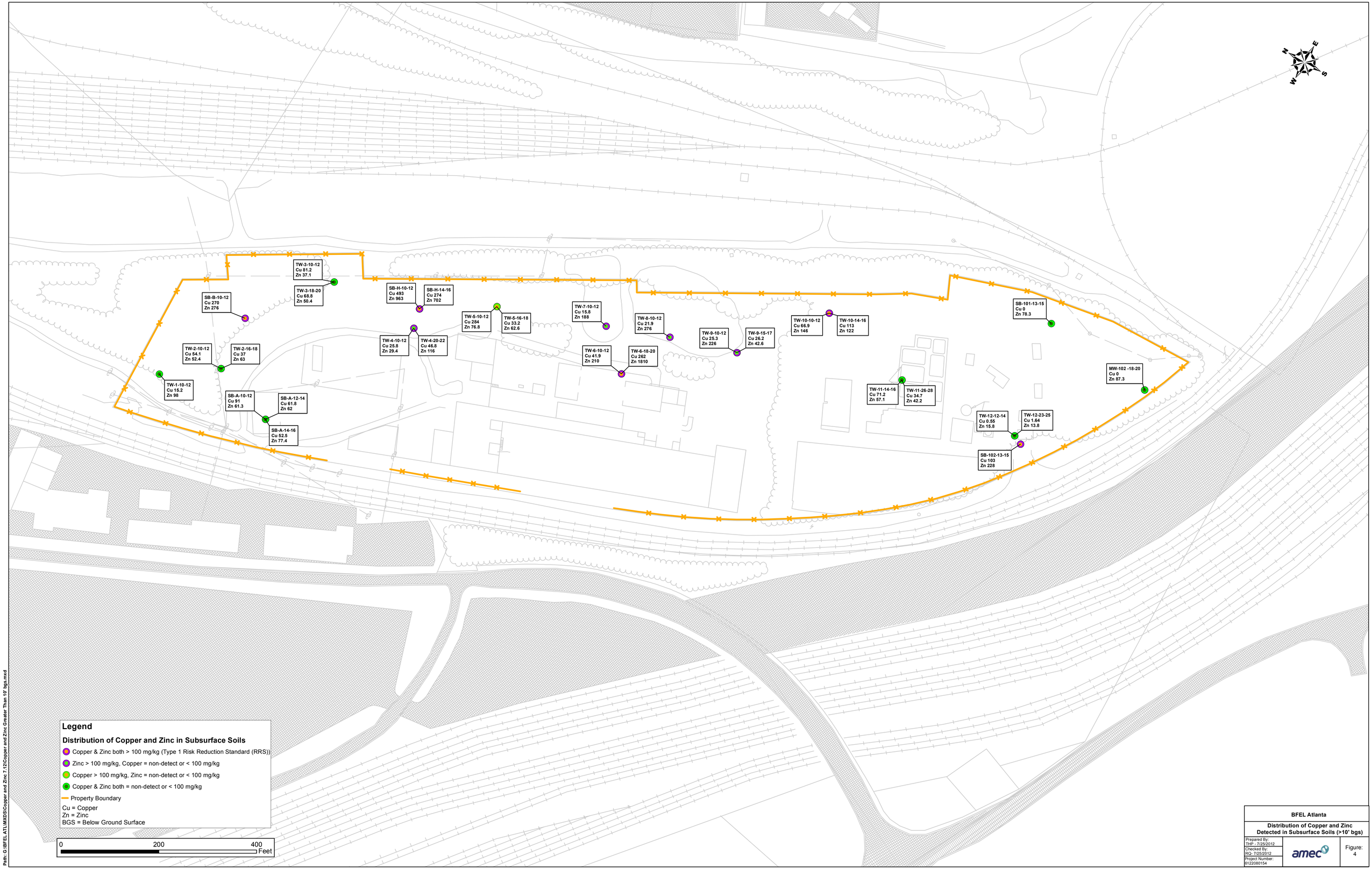
BFEL Atlanta

Distribution of Copper and Zinc Detected in Subsurface Soils (2-10' bgs)

Prepared By: THP - 7/25/2012
Checked By: RG- 7/25/2012
Project Number: 6122080154

amec

Figure: 3



Path: G:\BFEL ATL\MXDS\Copper and Zinc 7.12\Copper and Zinc Greater Than 10' bgs.mxd

BFEL Atlanta		
Distribution of Copper and Zinc Detected in Subsurface Soils (>10' bgs)		
Prepared By: THF - 7/25/2012	amec	Figure: 4
Checked By: RQ- 7/25/2012		
Project Number: 6122080154		

SW2010-18	9/23/2010
Total Metals	
Arsenic	0.0032
Copper	0.052
Lead	<0.0005
Zinc	2
Dissolved	
Arsenic	0.0014 J
Copper	0.02
Lead	<0.0002
Zinc	1.7

SW2010-17	9/23/2010
Total Metals	
Arsenic	0.0029
Copper	0.054
Lead	<0.0005
Zinc	1.9
Dissolved	
Arsenic	<0.0013
Copper	0.024
Lead	<0.0002
Zinc	1.6

SW2010-16	9/23/2010
Total Metals	
Arsenic	0.0055
Copper	0.12
Lead	0.0047
Zinc	2.8
Dissolved	
Arsenic	<0.0013
Copper	0.03
Lead	<0.0002
Zinc	2.3

SW2010-15	9/23/2010
Total Metals	
Arsenic	0.0025
Copper	0.084
Lead	<0.0005
Zinc	2.4
Dissolved	
Arsenic	<0.0013
Copper	0.038
Lead	<0.0002
Zinc	2.2

MW-118	8-17-07& 9-20-07
Arsenic	<0.0025
Lead	<0.0015
Copper	0.018
Zinc	0.053

MW-103A	8/14/2007
Arsenic	<0.0025
Lead	0.012

MW-103B	8/14/2007
Arsenic	<0.0025
Lead	0.0022

MW-107D	09/15/2010
Arsenic	<0.0025
Copper	<0.005
Lead	<0.0015
Zinc	<0.02

SW2010-14	9/23/2010
Total Metals	
Arsenic	0.028
Copper	0.78
Lead	0.014
Zinc	15
Dissolved	
Arsenic	<0.0013
Copper	0.048
Lead	<0.0002
Zinc	2.5

SW2010-13	9/23/2010
Total Metals	
Arsenic	0.0029
Copper	0.11
Lead	<0.0005
Zinc	2.3
Dissolved	
Arsenic	<0.0013
Copper	0.053
Lead	<0.0002
Zinc	2.1

SW2010-12	9/23/2010
Total Metals	
Arsenic	0.0067
Copper	0.31
Lead	0.0019
Zinc	3.2
Dissolved	
Arsenic	0.0016 J
Copper	0.092
Lead	<0.0002
Zinc	2.6

SW2010-10	9/23/2010
Total Metals	
Arsenic	0.0014
Copper	0.01
Lead	<0.0005
Zinc	0.5
Dissolved	
Arsenic	0.0023
Copper	0.0054
Lead	<0.0002
Zinc	0.44

SW2010-11	9/23/2010
Total Metals	
Arsenic	0.0059
Copper	0.22
Lead	0.012
Zinc	3
Dissolved	
Arsenic	0.0016 J
Copper	0.097
Lead	<0.0002
Zinc	2.7

SW2010-9	9/23/2010
Total Metals	
Arsenic	0.0049
Copper	0.011
Lead	0.00064 J
Zinc	0.62
Dissolved	
Arsenic	0.0023 J
Copper	0.0059
Lead	<0.0002
Zinc	0.54

SW2010-7	9/23/2010
Total Metals	
Arsenic	0.0082
Copper	0.015
Lead	0.0032
Zinc	0.81
Dissolved	
Arsenic	0.0019 J
Copper	0.006
Lead	<0.0002
Zinc	0.76

SW2010-8	9/23/2010
Total Metals	
Arsenic	0.0053
Copper	0.013
Lead	0.0022
Zinc	0.65
Dissolved	
Arsenic	0.002 J
Copper	0.0055
Lead	<0.0002
Zinc	0.5

SW2010-6	9/23/2010
Total Metals	
Arsenic	0.0059
Copper	0.012
Lead	0.00055 J
Zinc	0.087
Dissolved	
Arsenic	0.0018 J
Copper	0.0056
Lead	<0.0002
Zinc	0.72

SW2010-5	9/23/2010
Total Metals	
Arsenic	0.008
Copper	0.016
Lead	0.00067 J
Zinc	0.97
Dissolved	
Arsenic	0.0015 J
Copper	0.0074
Lead	<0.0002
Zinc	0.89

MW-106D	09/15/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	<0.005
Zinc	0.11

SW2010-4	9/23/2010
Total Metals	
Arsenic	0.016
Copper	0.016
Lead	0.0046
Zinc	0.54
Dissolved	
Arsenic	<0.0013
Copper	0.0073
Lead	<0.0002
Zinc	0.56

SW2010-3	9/23/2010
Total Metals	
Arsenic	0.025
Copper	0.0071
Lead	0.00096 J
Zinc	0.084
Dissolved	
Arsenic	0.0014 J
Copper	0.0031 J
Lead	<0.0002
Zinc	0.038

SW2010-2	9/23/2010
Total Metals	
Arsenic	0.043
Copper	0.0065
Lead	0.0015
Zinc	0.027
Dissolved	
Arsenic	0.0074
Copper	0.0034 J
Lead	<0.0002
Zinc	0.012 J

SW2010-1	9/23/2010
Total Metals	
Arsenic	0.09
Copper	0.0043 J
Lead	0.0024
Zinc	0.016 J
Dissolved	
Arsenic	0.025
Copper	0.0012 J
Lead	<0.0002
Zinc	<0.0083

MW-105	09/15/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	0.0057
Zinc	0.024

MW-113	09/15/2010
Arsenic	0.023
Lead	0.0019
Copper	15
Zinc	95

TW-3	5/31/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Total	1.09
Copper Dissolved	1.01
Lead Total	0.00266
Lead Dissolved	0.00175
Zinc Total	2.14
Zinc Dissolved	2.0

MW-114	09/14/2010
Arsenic	<0.0025
Lead	0.004
Copper	2.2
Zinc	8.7

MW-25	09/14/2010
Arsenic	0.0027
Lead	0.02
Copper	0.32
Zinc	2.9

TW-7	6/1/2012
Arsenic Dissolved	<0.1
Arsenic Total	<0.05
Copper Total	95.0
Copper Dissolved	88.4
Lead Total	0.0391
Lead Dissolved	0.0404
Zinc Dissolved	237
Zinc Total	226

MW-109	09/14/2010
Arsenic	0.061
Copper	0.079
Lead	0.61
Zinc	25

MW-111	09/14/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	0.039
Zinc	4.4

MW-110	07/29/2010 & 09/14/2010
Arsenic	<0.0025
Lead	0.0015
Copper	0.39
Zinc	5.7

MW-115	09/14/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	6.7
Zinc	20

MW-117	09/14/2010
Arsenic	<0.0025
Copper	0.038
Lead	<0.0015
Zinc	1.6

MW-104D	09/15/2010
Arsenic	0.0042
Lead	<0.0015
Copper	<0.005
Zinc	<0.02

MW-104A	09/15/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	<0.005
Zinc	<0.02

MW-108	07/29/2010 & 09/14/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	0.3
Zinc	3.6

TW-10	5/31/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Total	6.98
Copper Dissolved	6.43
Lead Dissolved	0.00228
Lead Total	0.00271
Zinc Total	9.24
Zinc Dissolved	8.66

TW-5	5/30/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Total	0.865
Copper Dissolved	0.75
Lead Total	0.00292
Lead Dissolved	<0.001
Zinc Total	13.7
Zinc Dissolved	8.6

MW-22	07/28/2010 & 9/13/2010
Arsenic	0.0038
Lead	0.004
Copper	4.0
Zinc	8.3

TW-1	5/30/2012
Arsenic Dissolved	<0.005
Arsenic Total	<0.005
Copper Total	<0.002
Copper Dissolved	<0.002
Lead Total	<0.001
Lead Dissolved	<0.001
Zinc Total	0.178
Zinc Dissolved	0.18

TW-2	5/30/2012
Arsenic Total	<0.005
Arsenic Dissolved	0.0003
Copper Total	0.0019
Copper Dissolved	0.0010
Lead Total	<0.001
Lead Dissolved	<0.001
Zinc Total	0.0109
Zinc Dissolved	0.011

TW-2	5/30/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Total	<0.002
Copper Dissolved	<0.002
Lead Total	<0.001
Lead Dissolved	<0.001
Zinc Total	0.0109
Zinc Dissolved	<0.01

MW-116	7/28/2010 & 09/13/2010
Arsenic	<0.0025
Lead	0.0073
Copper	4.1
Zinc	12

MW-1B	7/29/2010 & 09/13/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	<0.005
Zinc	<0.02

TW-6	5/30/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Dissolved	0.163
Copper Total	0.195
Lead Total	<0.001
Lead Dissolved	<0.001
Zinc Total	0.79
Zinc Dissolved	0.788

TW-8	5/31/2012
Arsenic Dissolved	0.0174
Arsenic Total	0.101
Copper Dissolved	0.0278
Copper Total	0.0668
Lead Dissolved	<0.001
Lead Total	<0.001
Zinc Dissolved	4.16
Zinc Total	4.4

TW-9	5/31/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Dissolved	0.0158
Copper Total	0.0168
Lead Total	<0.001
Lead Dissolved	<0.001
Zinc Dissolved	1.18
Zinc Total	1.26

MW-112	07/28/2010 & 09/13/2010
Arsenic	0.015
Lead	<0.0015
Copper	0.054
Zinc	1

TW-11	5/31/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Dissolved	0.121
Copper Total	0.132
Lead Dissolved	0.00212
Lead Total	0.00252
Zinc Total	0.738
Zinc Dissolved	0.688

TW-12	5/31/2012
Arsenic Total	<0.005
Arsenic Dissolved	<0.005
Copper Total	0.00291
Copper Dissolved	<0.002
Lead Dissolved	<0.001
Lead Total	<0.001
Zinc Total	0.0715
Zinc Dissolved	0.0529

MW-102	07/29/2010 & 09/14/2010
Arsenic	<0.0025
Lead	0.0025
Copper	<0.005
Zinc	<0.02

MW-26	07/28/2010 & 09/13/2010
Arsenic	<0.0025
Lead	<0.0015
Copper	0.01
Zinc	0.16

MW-101	07/28/2010 & 09/13/2010
Arsenic	<0.0025
Lead	0.0035
Copper	0.022
Zinc	0.66

LEGEND:

MW-104 — LAW/MACTEC CSR MONITORING WELL LOCATIONS (MW-1A, MW-1B, MW-101 TO MW-105, MW-103D, MW-104A, MW-104D, MW-106D, MW-107D, MW-108, MW-109, AND MW-110, MW-111 THROUGH MW-118 (FEBRUARY, JUNE, JULY, DECEMBER 1997, MAY 1998, JANUARY 2000, NOVEMBER 2002 AND AUGUST 2007) (MW-106 AND MW-107 WERE NOT INSTALLED)

MW-10 — T.M. GATES MONITORING WELL LOCATIONS (MW-1 TO MW-27, MW-7 WAS NOT INSTALLED) (AUGUST 1983, JANUARY 1984, JUNE 1985)

DW-1B — T.M. GATES DEEP MONITORING WELL LOCATIONS (DW-1A, DW-1B, DW-2A, DW-2B) (AUGUST 1983, FEBRUARY 1984)

MW-1 — MONITORING WELLS ABANDONED BY LAW (MW-1, MW-1A, MW-2, MW-3, MW-4, MW-6, MW-8, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-18, MW-19, MW-20, MW-23, MW-27, DW-1A, DW-2A, DW-2B, AND MW-104) (JUNE 1995, JUNE 1997, AUGUST 1998, JANUARY 2000, AND AUGUST 2007)

TW-1 — TEMPORARY WELLS

SW-2010-1 — MACTEC SURFACE WATER SAMPLING LOCATIONS (SW-2010-1 TO SW-2010-18)

MW-1(BFI) — APPROXIMATE LOCATION OF MONITORING WELLS INSTALLED FOR 1993 PHASE II INVESTIGATION.

(POD) — POINT OF DEMONSTRATION WELL

ARSENIC, LEAD, COPPER, AND ZINC IN GROUNDWATER ARE DELINEATED PER THE VRP DELINEATION CRITERIA 12-8-108(E) DEFAULT RESIDENTIAL CLEANUP STANDARDS (TYPE I RRS)

ARSENIC	0.01 MG/L
LEAD	0.015 MG/L
COPPER	1.3 MG/L
ZINC	2 MG/L

HORIZONTAL DELINEATION OF GROUND-WATER CONTAMINATION BASED ON TYPE I RRS

PROPERTY BOUNDARIES

ABOVEGROUND POWER TRANSMISSION LINES

BELOWGROUND FIBER OPTICS CABLE

FENCE

EXISTING STRUCTURE

FORMER STRUCTURE

TREE LINE

STREAM

NA — CONSTITUENT NOT ANALYZED

ALL CONCENTRATIONS EXPRESSED IN MILLIGRAMS PER LITER (mg/L)

SCALE IN FEET
0 100 200

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REV	DATE	BY	SUB	APP	DESCRIPTION	REV	DATE	BY	SUB	APP	DESCRIPTION

DESIGNED R. QUINN
DRAWN T. GLADSTONE
CHECKED M. ANDREWS
IN CHARGE L. NEAL
DATE 7/9/2012

FORMER ESTECH GENERAL CHEMICALS SITE

ATLANTA, GEORGIA

amec

Environment & Infrastructure, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

DISTRIBUTION AND DELINEATION OF ARSENIC, LEAD, COPPER AND ZINC DETECTED IN GROUND WATER

SCALE AS SHOWN
CONTRACT 6122-08-0154
DWG. NO. 5
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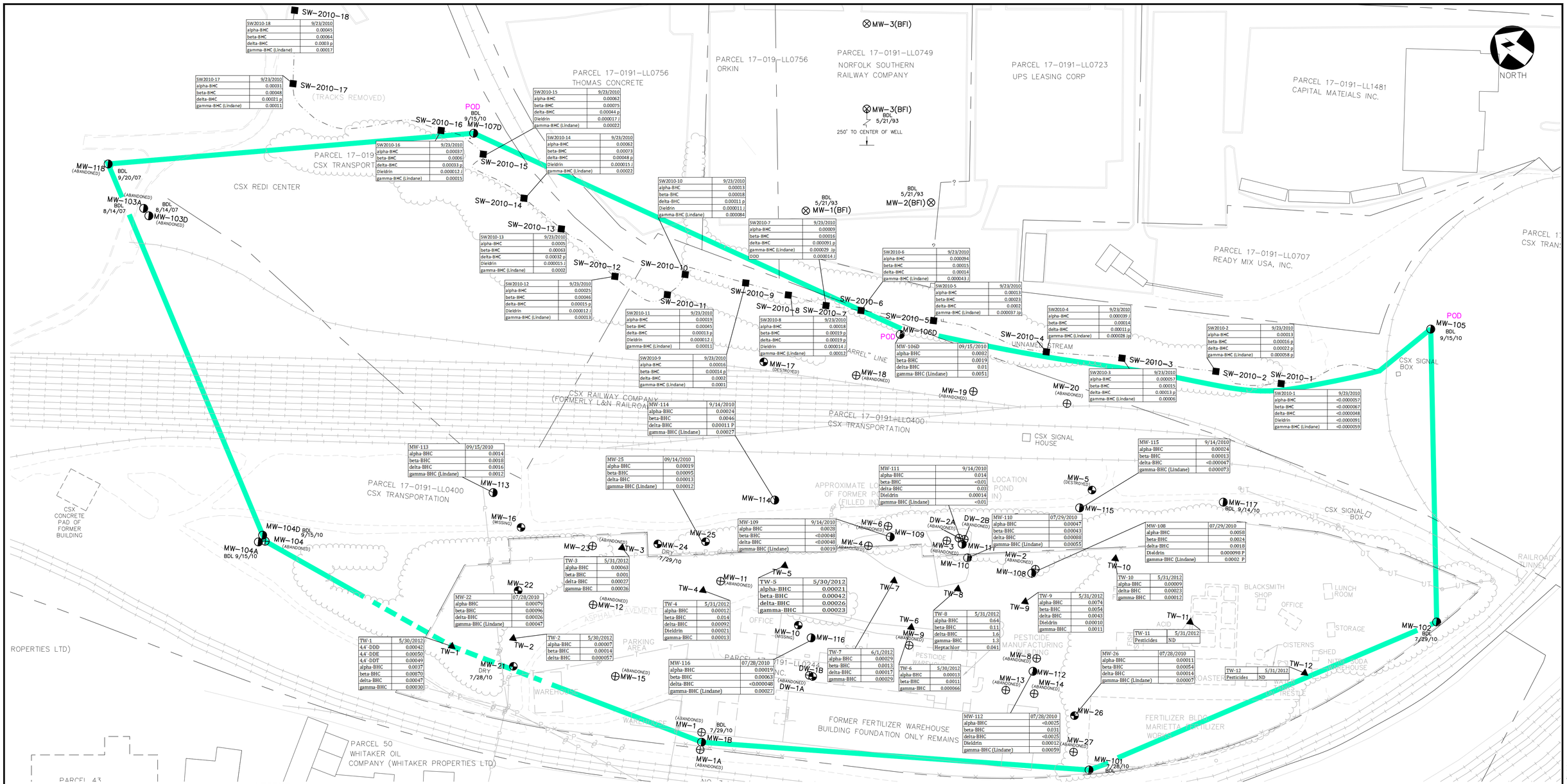
PAGE NO

J:\BFEL ATLANTA\MAY 2012\FIGURE 5.dwg – Layout1 08/06/2012 11:09am Tonya.Gladstone



SW2010-18	9/23/2010
alpha-BHC	0.00045
beta-BHC	0.00064
delta-BHC	0.0003 p
gamma-BHC (Lindane)	0.00017

SW2010-17	9/23/2010
alpha-BHC	0.00031
beta-BHC	0.00048
delta-BHC	0.00021 p
gamma-BHC (Lindane)	0.00011

SW2010-16	9/23/2010
alpha-BHC	0.00037
beta-BHC	0.0006
delta-BHC	0.00033 p
Dieldrin	0.000012 J
gamma-BHC (Lindane)	0.00015

SW2010-15	9/23/2010
alpha-BHC	0.00062
beta-BHC	0.00075
delta-BHC	0.00044 p
Dieldrin	0.000017 J
gamma-BHC (Lindane)	0.00023

SW2010-14	9/23/2010
alpha-BHC	0.00062
beta-BHC	0.00073
delta-BHC	0.00048 p
Dieldrin	0.000015 J
gamma-BHC (Lindane)	0.00022

SW2010-13	9/23/2010
alpha-BHC	0.0005
beta-BHC	0.00063
delta-BHC	0.00032 p
Dieldrin	0.000015 J
gamma-BHC (Lindane)	0.0002

SW2010-12	9/23/2010
alpha-BHC	0.00025
beta-BHC	0.00046
delta-BHC	0.00015 p
Dieldrin	0.000012 J
gamma-BHC (Lindane)	0.00013

SW2010-11	9/23/2010
alpha-BHC	0.00019
beta-BHC	0.00045
delta-BHC	0.00013 p
Dieldrin	0.000012 J
gamma-BHC (Lindane)	0.00011

SW2010-10	9/23/2010
alpha-BHC	0.00013
beta-BHC	0.00018
delta-BHC	0.00011 p
Dieldrin	0.000011 J
gamma-BHC (Lindane)	0.000084

SW2010-9	9/23/2010
alpha-BHC	0.00016
beta-BHC	0.00014 p
delta-BHC	0.0002
gamma-BHC (Lindane)	0.0001

SW2010-8	9/23/2010
alpha-BHC	0.00018
beta-BHC	0.00019 p
delta-BHC	0.00019 p
Dieldrin	0.000014 J
gamma-BHC (Lindane)	0.00012

SW2010-7	9/23/2010
alpha-BHC	0.00009
beta-BHC	0.00016
delta-BHC	0.000091 p
gamma-BHC (Lindane)	0.000029 Jp
DDD	0.000014 J

SW2010-6	9/23/2010
alpha-BHC	0.000094
beta-BHC	0.00015
delta-BHC	0.00014
gamma-BHC (Lindane)	0.000043 J

SW2010-5	9/23/2010
alpha-BHC	0.00013
beta-BHC	0.00023
delta-BHC	0.0002
gamma-BHC (Lindane)	0.000037 Jp

MW-106D	09/15/2010
alpha-BHC	0.0002
beta-BHC	0.0019
delta-BHC	0.01
gamma-BHC (Lindane)	0.0051

SW2010-4	9/23/2010
alpha-BHC	0.000039 J
beta-BHC	0.00014
delta-BHC	0.00011 p
gamma-BHC (Lindane)	0.000028 Jp

SW2010-3	9/23/2010
alpha-BHC	0.000057
beta-BHC	0.00015
delta-BHC	0.00013 p
gamma-BHC (Lindane)	0.00006

SW2010-2	9/23/2010
alpha-BHC	0.00013
beta-BHC	0.00016 p
delta-BHC	0.00022 p
gamma-BHC (Lindane)	0.000058 p

SW2010-1	9/23/2010
alpha-BHC	<0.0000057
beta-BHC	<0.0000067
delta-BHC	<0.0000048
Dieldrin	<0.0000091
gamma-BHC (Lindane)	<0.0000059

MW-114	9/14/2010
alpha-BHC	0.00024
beta-BHC	0.0046
delta-BHC	0.00011 P
gamma-BHC (Lindane)	0.00027

MW-113	09/15/2010
alpha-BHC	0.0014
beta-BHC	0.0018
delta-BHC	0.0016
gamma-BHC (Lindane)	0.0012

MW-25	09/14/2010
alpha-BHC	0.00019
beta-BHC	0.00095
delta-BHC	0.00013
gamma-BHC (Lindane)	0.00012

MW-111	9/14/2010
alpha-BHC	0.014
beta-BHC	<0.01
delta-BHC	0.03
Dieldrin	0.00014
gamma-BHC (Lindane)	<0.01

MW-115	9/14/2010
alpha-BHC	0.00024
beta-BHC	0.00013
delta-BHC	<0.000047
gamma-BHC (Lindane)	0.000073

MW-109	9/14/2010
alpha-BHC	0.0028
beta-BHC	<0.00048
delta-BHC	<0.00048
gamma-BHC (Lindane)	0.0019

MW-110	07/29/2010
alpha-BHC	0.00047
beta-BHC	0.00043
delta-BHC	0.00088
gamma-BHC (Lindane)	0.00055

MW-108	07/29/2010
alpha-BHC	0.0058
beta-BHC	0.0024
delta-BHC	0.0018
Dieldrin	0.000098 P
gamma-BHC (Lindane)	0.0002 P

TW-3	5/31/2012
alpha-BHC	0.00063
beta-BHC	0.001
delta-BHC	0.00027
gamma-BHC	0.00026

MW-22	07/28/2010
alpha-BHC	0.00079
beta-BHC	0.00096
delta-BHC	0.00026
gamma-BHC (Lindane)	0.00047

TW-4	5/31/2012
alpha-BHC	0.00012
beta-BHC	0.014
delta-BHC	0.00092
Dieldrin	0.00021
gamma-BHC	0.00013

TW-5	5/30/2012
alpha-BHC	0.00021
beta-BHC	0.00042
delta-BHC	0.00026
gamma-BHC	0.00023

TW-1	5/30/2012
4,4'-DDD	0.00042
4,4'-DDE	0.00050
4,4'-DDT	0.00049
alpha-BHC	0.0037
beta-BHC	0.00870
delta-BHC	0.00047
gamma-BHC	0.00030

TW-2	5/30/2012
alpha-BHC	0.00007
beta-BHC	0.00014
delta-BHC	0.000057

MW-116	07/28/2010
alpha-BHC	0.00019
beta-BHC	0.00063
delta-BHC	<0.0000048
gamma-BHC (Lindane)	0.00027

TW-7	6/1/2012
alpha-BHC	0.00029
beta-BHC	0.0013
delta-BHC	0.00017
gamma-BHC	0.00029

TW-8	5/31/2012
alpha-BHC	0.64
beta-BHC	0.11
delta-BHC	1.6
gamma-BHC	1.3
Heptachlor	0.041

TW-6	5/30/2012
alpha-BHC	0.00013
beta-BHC	0.0011
gamma-BHC	0.000066

TW-9	5/31/2012
alpha-BHC	0.0074
beta-BHC	0.0054
delta-BHC	0.0043
Dieldrin	0.00010
gamma-BHC	0.0011

TW-10	5/31/2012
alpha-BHC	0.00009
delta-BHC	0.00022
gamma-BHC	0.00012

TW-11	5/31/2012
Pesticides	ND

MW-26	07/28/2010
alpha-BHC	0.00011
beta-BHC	0.00054
delta-BHC	0.00014
gamma-BHC (Lindane)	0.00007

TW-12	5/31/2012
Pesticides	ND

MW-112	07/28/2010
alpha-BHC	<0.0025
beta-BHC	0.031
delta-BHC	<0.0025
Dieldrin	0.00012
gamma-BHC (Lindane)	0.00059

LEGEND:

MW-104 — LAW/MACTEC CSR MONITORING WELL LOCATIONS (MW-1A, MW-1B, MW-101 TO MW-105, MW-103D, MW-104A, MW-104D, MW-106D, MW-107D, MW-108, MW-109, AND MW-110, MW-111 THROUGH MW-118 (FEBRUARY, JUNE, JULY, DECEMBER 1997, MAY 1998, JANUARY 2000, NOVEMBER 2002 AND AUGUST 2007) (MW-106 AND MW-107 WERE NOT INSTALLED)

MW-10 — T.M. GATES MONITORING WELL LOCATIONS (MW-1 TO MW-27, MW-7 WAS NOT INSTALLED) (AUGUST 1983, JANUARY 1984, JUNE 1985)

DW-1B — T.M. GATES DEEP MONITORING WELL LOCATIONS (DW-1A, DW-1B, DW-2A, DW-2B) (AUGUST 1983, FEBRUARY 1984)

MW-1 — MONITORING WELLS ABANDONED BY LAW (MW-1, MW-1A, MW-2, MW-3, MW-4, MW-6, MW-8, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-18, MW-19, MW-20, MW-23, MW-27, DW-1A, DW-2A, DW-2B, AND MW-104) (JUNE 1995, JUNE 1997, AUGUST 1998, JANUARY 2000, AND AUGUST 2007)

P — THE LOWER OF THE TWO VALUES IS REPORTED WHEN THE % DIFFERENCE BETWEEN THE RESULTS OF THE TWO GC COLUMNS IS GREATER THAN 40%

SW-2010-1 — MACTEC SURFACE WATER SAMPLING LOCATIONS (SW-2010-1 TO SW-2010-18)

MW-1(BFI) — APPROXIMATE LOCATION OF MONITORING WELLS INSTALLED FOR 1993 DUE PHASE II INVESTIGATION.

TW-1 — TEMPORARY WELLS

POD — POINT OF DEMONSTRATION WELL

PROPERTY BOUNDARIES

ABOVEGROUND POWER TRANSMISSION LINES

BELOWGROUND FIBER OPTICS CABLE

FENCE

EXISTING STRUCTURE

FORMER STRUCTURE

TREE LINE

STREAM

PESTICIDES, IN GROUND WATER ARE DELINEATED PER THE VRP DELINEATION CRITERIA 12-8-108(E) DEFAULT RESIDENTIAL CLEANUP STANDARDS (TYPE I RRS).

HORIZONTAL DELINEATION OF GROUND-WATER CONTAMINATION BASED ON TYPE I RRS

ALL CONCENTRATIONS EXPRESSED IN MILLIGRAMS PER LITER (mg/L)

SCALE IN FEET
0 100 200

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DESIGNED R. QUINN
DRAWN T. GLADSTONE
CHECKED M. ANDREWS
IN CHARGE L. NEAL
DATE 7/9/2012

FORMER ESTECH GENERAL CHEMICALS SITE

ATLANTA, GEORGIA

amec
Environment & Infrastructure, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

DISTRIBUTION AND DELINEATION OF PESTICIDES DETECTED IN GROUND WATER

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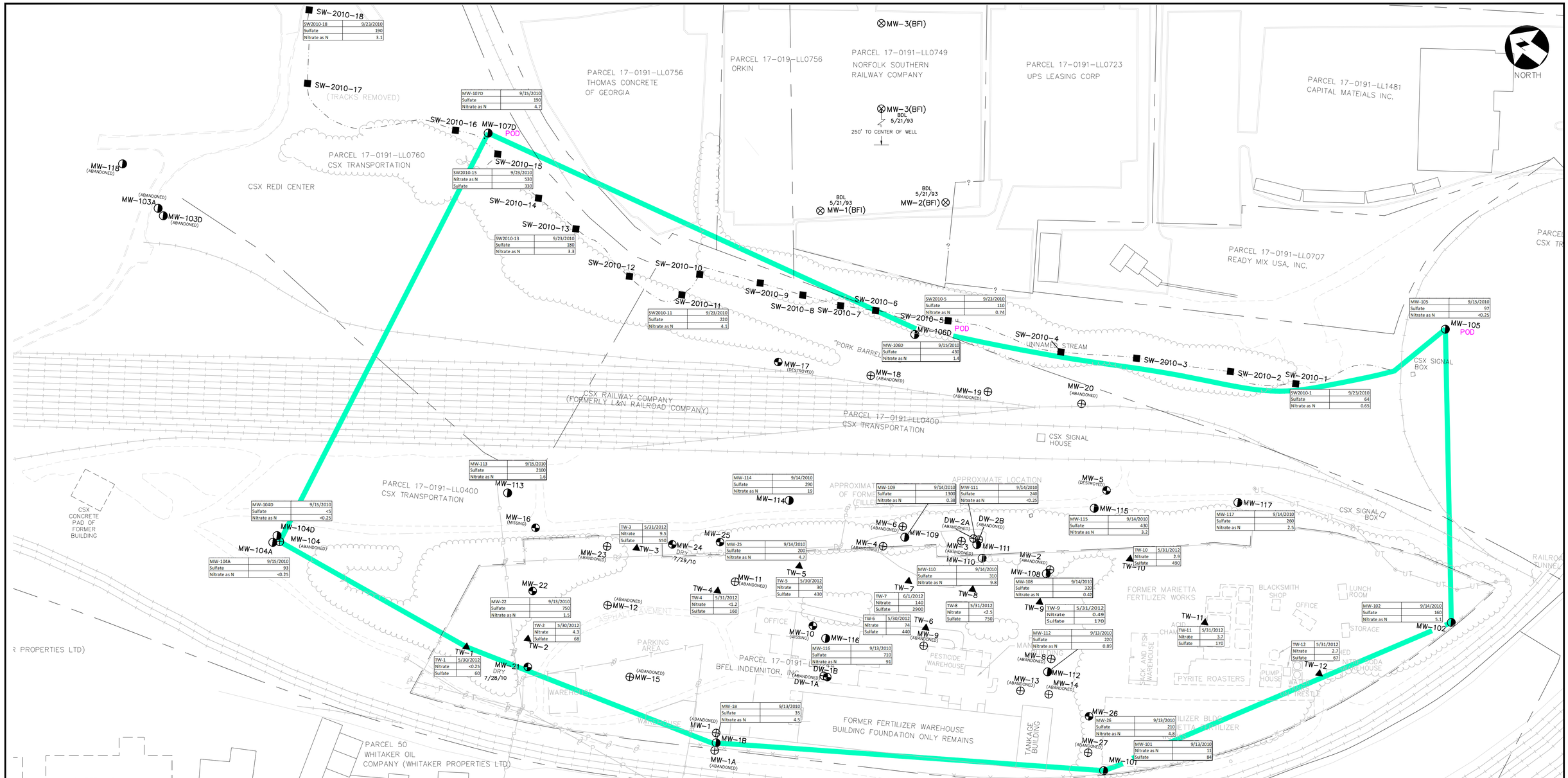

LEGEND:

- MW-104 ◑ — LAW/MACTEC CSR MONITORING WELL LOCATIONS (MW-1A, MW-1B, MW-101 TO MW-105, MW-103D, MW-104A, MW-104D, MW-106D, MW-107D, MW-108, MW-109, AND MW-110, MW-111 THROUGH MW-118 (FEBRUARY, JUNE, JULY, DECEMBER 1997, MAY 1998, JANUARY 2000, NOVEMBER 2002 AND AUGUST 2007) (MW-106 AND MW-107 WERE NOT INSTALLED)
- MW-10 ◔ — T.M. GATES MONITORING WELL LOCATIONS (MW-1 TO MW-27, MW-7 WAS NOT INSTALLED) (AUGUST 1983, JANUARY 1984, JUNE 1985)
- DW-1B ◔ — T.M. GATES DEEP MONITORING WELL LOCATIONS (DW-1A, DW-1B, DW-2A, DW-2B) (AUGUST 1983, FEBRUARY 1984)
- MW-1 ⊕ — MONITORING WELLS ABANDONED BY LAW (MW-1, MW-1A, MW-2, MW-3, MW-4, MW-6, MW-8, MW-9, MW-11, MW-12, MW-13, MW-14, MW-15, MW-18, MW-19, MW-20, MW-23, MW-27, DW-1A, DW-2A, DW-2B, AND MW-104) (JUNE 1995, JUNE 1997, AUGUST 1998, JANUARY 2000, AND AUGUST 2007)
- TW-1 ▲ — TEMPORARY WELLS
- SW-2010-1 ■ — MACTEC SURFACE WATER SAMPLING LOCATIONS (SW-2010-1 TO SW-2010-18)
- MW-1(BFI) ⊗ — APPROXIMATE LOCATION OF MONITORING WELLS INSTALLED FOR 1993 DUE PHASE II INVESTIGATION.

NITRATE AND SULFATE IN GROUNDWATER ARE DELINEATED PER THE VRP DELINEATION CRITERIA 12-8-108(E) DEFAULT RESIDENTIAL CLEANUP STANDARDS (TYPE I RRS)

NITRATE 10 MG/L
SULFATE 250 MG/L

POD — POINT OF DEMONSTRATION WELL

- HORIZONTAL DELINEATION OF GROUND-WATER CONTAMINATION BASED ON TYPE I RRS
- PROPERTY BOUNDARIES
- ABOVEGROUND POWER TRANSMISSION LINES
- BELOWGROUND FIBER OPTICS CABLE
- FENCE
- EXISTING STRUCTURE
- FORMER STRUCTURE
- TREE LINE
- STREAM

ALL CONCENTRATIONS EXPRESSED IN MILLIGRAMS PER LITER (mg/L)

SCALE IN FEET
0 100 200

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DESIGNED R. QUINN
DRAWN T. GLADSTONE
CHECKED M. ANDREWS
IN CHARGE L. NEAL
DATE 7/9/2012

FORMER ESTECH GENERAL CHEMICALS SITE

ATLANTA, GEORGIA

amec
Environment & Infrastructure, Inc.
3200 TOWN POINT DRIVE, SUITE 100
KENNESAW, GEORGIA 30144 (770) 421-3400

DISTRIBUTION AND DELINEATION OF NITRATE AND SULFATE GROUND WATER

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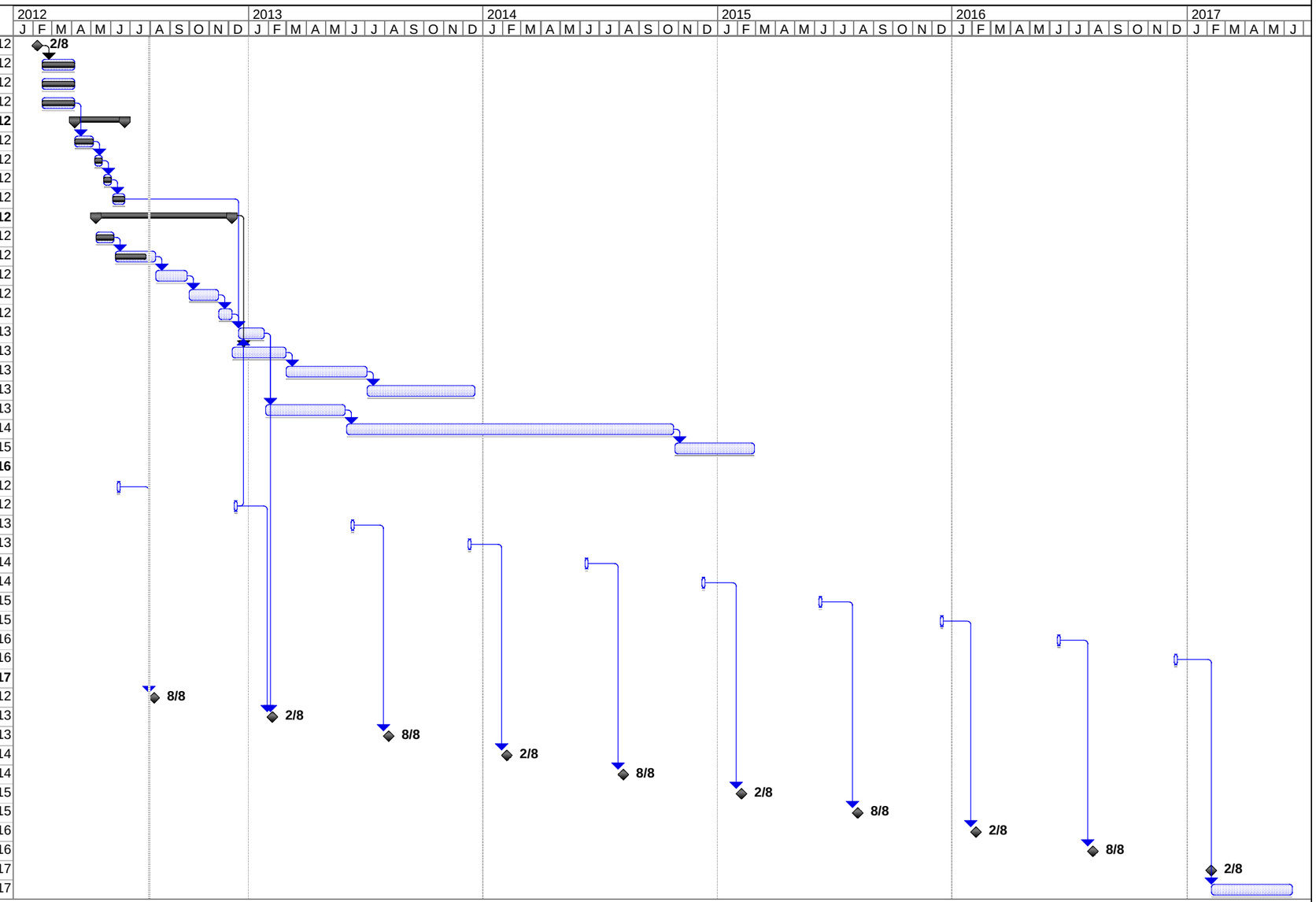
J:\BFEL ATLANTA\MAY 2012\FIGURE 7.dwg - Layout1 08/06/2012 8:53am Tonya.Gladstone

FIGURE 8 - SCHEDULE FOR IMPLEMENTATION OF VOLUNTARY REMEDIATON PLAN
FORMER ESTECH, ATLANTA, GA

ID	Task Name	Start	Finish
1	EPD approves VRP Application and Remediation Plan	Wed 2/8/12	Wed 2/8/12
2	Prepare/File/Submit Affidavit to BFEL Property Deed	Wed 2/15/12	Fri 4/6/12
3	Prepare/Submit Financial Assurance for VRP	Wed 2/15/12	Fri 4/6/12
4	Prepare/Submit Updated VRP Implementation Schedule	Wed 2/15/12	Fri 4/6/12
5	**Copper/Zinc Source ID & Soil Inv on BFEL Property**	**Fri 4/6/12**	**Fri 6/22/12**
6	Subcontractor Procurement	Fri 4/6/12	Fri 5/4/12
7	Site Clearing/Utility Clearance/Surveying	Mon 5/7/12	Fri 5/18/12
8	Install Soil Borings/Temporary MWs on BFEL Property	Mon 5/21/12	Fri 6/1/12
9	Laboratory Analysis	Mon 6/4/12	Fri 6/22/12
10	**Soil/GW Inv on CSX Property**	**Wed 5/9/12**	**Thu 12/6/12**
11	Work Plan for CSX Investigation	Wed 5/9/12	Wed 6/6/12
12	CSX Review/Approval of Work Plan	Fri 6/8/12	Thu 8/9/12
13	Site Clearing/Utility Clearance/Surveying - CSX Property	Fri 8/10/12	Fri 9/28/12
14	Install Soil Borings/MWs on CSX Property	Mon 10/1/12	Thu 11/15/12
15	Laboratory Analysis	Fri 11/16/12	Thu 12/6/12
16	Update Fate & Transport Modeling	Mon 12/17/12	Fri 1/25/13
17	Finalize Excavation Plan	Fri 12/7/12	Thu 2/28/13
18	Site Preparation/Permitting	Fri 3/1/13	Thu 7/4/13
19	Soil Excavation/Consolidation/Capping	Fri 7/5/13	Thu 12/19/13
20	Groundwater EHC-M Injection Pilot Test - BFEL Property	Mon 1/28/13	Fri 5/31/13
21	Pilot Test Performance Monitoring	Mon 6/3/13	Fri 10/24/14
22	Full Scale EHC-M Application	Mon 10/27/14	Fri 2/27/15
23	**Semi-Annual GW/SW Sampling**	**Mon 6/11/12**	**Fri 12/16/16**
24	Semi-Annual Sampling Event 1	Mon 6/11/12	Fri 6/15/12
25	Semi-Annual Sampling Event 2	Mon 12/10/12	Fri 12/14/12
26	Semi-Annual Sampling Event 3	Mon 6/10/13	Fri 6/14/13
27	Semi-Annual Sampling Event 4	Mon 12/9/13	Fri 12/13/13
28	Semi-Annual Sampling Event 5	Mon 6/9/14	Fri 6/13/14
29	Semi-Annual Sampling Event 6	Mon 12/8/14	Fri 12/12/14
30	Semi-Annual Sampling Event 7	Mon 6/8/15	Fri 6/12/15
31	Semi-Annual Sampling Event 8	Mon 12/14/15	Fri 12/18/15
32	Semi-Annual Sampling Event 9	Mon 6/13/16	Fri 6/17/16
33	Semi-Annual Sampling Event 10	Mon 12/12/16	Fri 12/16/16
34	**Submit Semi-Annual Status Report**	**Wed 8/8/12**	**Wed 2/8/17**
35	Submit Semi-Annual Status Report 1	Wed 8/8/12	Wed 8/8/12
36	Submit Semi-Annual Status Report 2	Fri 2/8/13	Fri 2/8/13
37	Submit Semi-Annual Status Report 3	Thu 8/8/13	Thu 8/8/13
38	Submit Semi-Annual Status Report 4	Sat 2/8/14	Sat 2/8/14
39	Submit Semi-Annual Status Report 5	Fri 8/8/14	Fri 8/8/14
40	Submit Semi-Annual Status Report 6	Sun 2/8/15	Sun 2/8/15
41	Submit Semi-Annual Status Report 7	Sat 8/8/15	Sat 8/8/15
42	Submit Semi-Annual Status Report 8	Mon 2/8/16	Mon 2/8/16
43	Submit Semi-Annual Status Report 9	Mon 8/8/16	Mon 8/8/16
44	Submit Semi-Annual Status Report 10	Wed 2/8/17	Wed 2/8/17
45	Preparation and Submittal of Post-Remediation CSR	Wed 2/8/17	Tue 6/13/17



Project: BFEL Atlanta Voluntary Reme
Date: Mon 7/30/12

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

APPENDIX A

RESPONSE TO EPD'S FEBRUARY 8, 2012 COMMENTS ON THE ADDENDUM TO VOLUNTARY REMEDIATION PROGRAM APPLICATION

RESPONSE TO GEORGIA ENVIRONMENTAL PROTECTION DIVISION
FEBRUARY 8, 2012 COMMENTS ON THE
ADDENDUM TO VOLUNTARY REMEDIATION PROGRAM APPLICATION,
DATED MARCH 16, 2011
FORMER ESTECH GENERAL CHEMICALS SITE
ATLANTA, FULTON COUNTY, GEORGIA SITE (HSI 10196)
TAX PARCELS 17-0191-LL0244 AND 17-0191-LL0400

August 8, 2012

Comment #1

While concurring with the proposed surface water monitoring plan, EPD reiterates that if surface water continues to exceed ISWQs after 3 years of monitoring, then additional remedial measures must be implemented so that the qualifying properties can certify compliance within the requisite 5-year timeframe.

Response to Comment #1

Noted.

Comment #2

A BIOSCREEN-AT Model was used to model out the concentrations at various distances from the source zone within the residuum and bedrock. The model was also used to determine the soil concentrations of COCs in the source zone that are protective of surface water quality. EPD provides the following comments on the modeling section of the application:

a. *The revised VRP Application did not include an appropriate fate and transport model for the metals impacts to the groundwater. Please ensure that an appropriate model is provided.*

Response to Comment #2a

The model will be updated with metals data after completion of the soil and groundwater investigations on both the Estech and CSX properties.

b. *The Response to Comment (9i) indicates that, "calibration of the fate and transport model to the currently observed concentrations is not possible," yet the revised document has indicated that the subsurface soil concentrations protective of groundwater will be calculated using this same fate & transport model. Without proper calibration of the model to site conditions EPD cannot concur with the use of the BIOSCREEN-AT model to calculate subsurface soil concentrations protective of groundwater. Please note that additional monitoring locations between the suspected source area and the point of exposure/point of demonstration well(s) may assist with properly calibrating the model in the future. In addition, EPD would be willing to accept certain site related assumptions regarding timing, location, and mass of the original source of the release, as long as these assumptions are based in most part on the available historical site data.*

Response to Comment #2b

An attempt will be made to calibrate the fate & transport model using data from the twelve additional monitoring wells that have been installed and sampled on the Estech property and three additional wells that are proposed for installation near the un-named stream on CSX property.

Comment #3

The Response to Comment (15) indicates that the SSG equation was not applied to lead and arsenic, and that the highest detected total metals result with a paired SPLP result less than the groundwater standard times the DAF (1) was selected as the soil concentration that would not leach over the groundwater Type 1 RRS. EPD concurs with the use of the methodology for determining an acceptable soil concentration by direct comparison of leaching test results with the target leachate concentration. However, prior to concurring with the resulting leaching values for arsenic and lead in soil, please provide a supporting table illustrating the SPLP data and the calculation(s) that lead to the proposed 22 mg/kg for arsenic and 120 mg/kg for lead.

Response to Comment #3

Attached Tables 4.5 and 4.6 presents the total arsenic and lead results with their corresponding SPLP results with the Kd calculation. The proposed 22 mg/kg for arsenic was selected because the next higher data point (23 mg/kg) leached at a concentration (0.021 mg/L) which was greater than the arsenic Type 1 RRS of 0.010 mg/L. The proposed 120 mg/kg for lead was selected because the next higher data point (200 mg/kg) leached at a concentration (0.027 mg/L) which was greater than the lead Type 1 RRS of 0.015 mg/L.

Comment #4

According to the Revised VRP Application, monitoring wells MW-105, MW-106D, and MW-107D are proposed as the point of demonstration wells. EPD does not concur with the proposed POD wells MW-105 and MW-107D, as they are both located on the eastern part of the creek and hydrologically located such that they would not identify contaminants before reaching the point of exposure to surface water. In addition, EPD recommends making an additional attempt at installing an additional shallow bedrock (POD) monitoring well at MW-106D should this location continue to be used as a POD well. Should this additional monitoring well be installed, please use the data from this monitoring location to update any future fate and transport models, and to support conclusions related to the vertical hydraulic gradients in close proximity to the creek (POE).

Response to Comment #4

A monitoring well is proposed for installation on the west side of the un-named stream adjacent to existing well MW-106D. Negotiations are on-going with CSX to obtain access to install this well. If CSX allows the installation, an attempt will be made to install this well; provided drilling equipment can reach the proposed location. Two wells are proposed for installation on the west side of the un-named stream, downgradient of existing wells MW-113 and MW-114. Negotiations are on-going with CSX to obtain access to install these wells. Wells MW-105 and

MW-107D will still be useful to demonstrate that contaminants are not migrating beneath the unnamed stream, which at times may decouple from groundwater.

Comment #5

The following comments are applicable to the proposed direct push technology monitoring locations illustrated in Figure 1 of the revised application:

a. *Please move the proposed location just north of SB-171 closer/proximal to MW-9 and exceedance area E.*

Response to Comment #5a

Direct-push technology (DPT) monitoring well (TW-6) north of SB-171 was positioned closer to the former well MW-9 location as shown on Figure 1.

b. *Please move the proposed location next to SB-140 closer to MW-23 and the property boundary that way the location may be used confirm baseline conditions for the proposed engineered soil cover Type 5 area.*

Response to Comment #5b

DPT well TW-3 was positioned closer to former well MW-23 as shown on Figure 1.

Comment #6

Should the permeable reactive barrier (PRB) be utilized as one of the primary corrective measures at the site, please ensure that a sufficient amount of groundwater monitoring wells are installed upgradient of the PRB, and between the stream and the PRB in order to properly evaluate its effectiveness at removing the groundwater contaminants before reaching the point of exposure.

Response to Comment #6

Attempts will be made to install wells as needed provided there is a physical space for drilling equipment in the PRB area and CSX grants access for the installation. Additionally, a PRB pilot test is planned to be conducted on the BFEL property that will provide additional data to evaluate the effectiveness of the PRB technology for site conditions. The on-site PRB will enable easier access to install monitoring wells up-gradient and down-gradient of the PRB.

Comment #7

EPD acknowledges that the PRB remedy is still in the conceptual phase; however, the proposed 400-foot length of the PRB does not seem sufficient to protect surface waters from impacts that will exceed ISWQs. Since protection of the surface water is the primary receptor of concern for groundwater and ISWQ violations are ongoing, EPD is requiring that the proposed pilot testing and design of the PRB remedy including supporting hydrologic modeling be submitted with the first progress report. If a different groundwater remedy is selected, that proposed remedy design should be included in the first progress report.

Response to Comment #7

As described above, BFEL proposes to conduct a pilot-test of the PRB on the BFEL property to evaluate the effectiveness of the technology with the site constituents prior to testing and installing a PBR near the stream. Hydrologic modeling will be prepared as part of the design for the Estech pilot-test version of the PRB. Investigation of the soil and groundwater are on-going on the Estech property and are proposed on the CSX property. The investigation data will be used in the selection of the location of the Estech property PRB.

Comment #8

The toxicity values used in the VRP reflect those used in IRIS or the May 2010 Regional Screening Level table. However, the U.S. EPA Regional Screening Levels (RSL) tables were updated in November 2011. Please revise those toxicity values accordingly. Thallium now has recommended toxicity factors.

Response to Comment #8

The toxicity values in the RRS tables have been updated to match those listed in the May 2012 U.S. EPA Regional Screening Level (RSL) table. Attached Tables 7.1a, 7.1b show the updated RRS based on the new RSL values. The RRS calculations are attached as Tables A-1 to A-7

Comment #9

Maximum detected concentrations in sediment samples should be compared to current residential RSLs. Please revise Table 4.11 accordingly.

Response to Comment #9

Table 4.11 has been updated to use the residential RSLs rather than the industrial RSLs and is attached.

Comment #10

Please provide the outputs from the ProUCL software for Exposure Point Concentrations.

Response to Comment #10

The ProUCL outputs are provided in Appendix C for surface soil and subsurface soil on the Estech/BFEL property and on the CSX property.

Comment #11

The screening values used to screen surface water on Table 4.12 are incorrect. Please use the current National Recommended Water Quality Criteria (http://water.epa.gov/scitechlswguidance/standards/current/index.cfin) to screen surface water protective of human health.

Response to Comment #11

Table 4.12 has been updated using the National Recommended Water Quality Criteria protective of human health obtained from the provided link. In addition, a second table is

provided that lists the chronic aquatic ambient water quality criteria (Georgia Instream Standards and National Recommended Water Quality Criteria).

Comment #12

The Type 2 Risk Reduction Standards (RRS) provided on Table 7.1 are acceptable for use at the site. However, the reference provided for many of the regulated substances does not reflect the correct reference letter. Specifically, while the values provided for aldrin, benzo(a)anthracene, benzo(a)pyrene, benzo(b/k)fluoranthene, chrysene, copper, DDD, DDE, DDT, heptachlor, lead, thallium, and toxaphene are all leaching values, they are not reflected in the provided reference. Please revise it accordingly.

Response to Comment #12

The noted references for the Type 2 RRS in Table 7.1a have been revised to indicate that these Type 2 RRS are based on leaching values.

Comment #13

It is still unclear to EPD as to how the remedial activities focused on achieving compliance with human health RRS values will reduce the risk, below acceptable limits, to ecological receptors. Additionally, the ecological limits have not been established. Without the establishment of Remedial Goal Options (RGOs) for ecological receptors, it is difficult for EPD to agree that the proposed remedial activities will be effective for ecological receptors. It is stated in the Addendum to VRP that, "If redevelopment activities do not achieve the aforementioned limits on exposure, a Baseline Ecological Risk Assessment (BERA) that documents that there are no unacceptable risks to ecological receptors may be developed." EPD agrees with this statement; however, please provide additional information on what the "ecological limits" are and how the proposed remedial activities will be effective at reducing risk to ecological receptors.

Response to Comment #13

The need for Ecological Remedial Goal Options (RGOs) will be evaluated after the site characterization for the Estech and CSX properties has been completed, and a revised SLERA using the additional data has been performed. Additionally, BFEL continues to try to locate a viable end user of the property, which could affect the available habitat for ecological receptors, as well as the planned remediation strategy. As part of the design for corrective action at the BFEL site, control of ecological exposures will be re-evaluated. If the proposed corrective actions do not adequately control exposure for ecological receptors, ecological RGOs will then be generated to provide guidance for risk managers.

APPENDIX A TABLES

Table 4.5: Summary of Analytical Results for Soil to Water Partition Coefficient Study

Location	***Notification***	**Site Background**	**SB-118**	**SB-131**	**SB-132**	**SB-132**	**SB-132**	**SB-133**	**SB-134**	**SB-134**	**SB-135**	**SB-136**	**SB-137**	**SB-138**
Depth (ft, bgs)	***Concentrations***	**Concentrations**	**0-2**	**3-5**	**3-5**	**12-13**	**14-15**	**0-2**	**8-10**	**13-15**	**0-2**	**3-5**	**0-2**	**3-5**
Date Sampled			**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**
PARAMETER, UNITS														
METALS (mg/kg)														
Arsenic	41	10	**53**	1.8	**730**	**1200**	**460**	**23**	**39**	1.2	**36**	**73**	**25**	4.2
Lead	400	84	**540**	19	**92**	20	19	**270**	35	14	**360**	**340**	**200**	22
SPLP METALS (mg/L)														
SPLP Arsenic			<0.0052	NA	<0.0052	<0.0052	<0.0052	0.021	<0.0052	NA	0.0069	<0.0052	0.0067	NA
SPLP Lead			0.015	NA	<0.005	0.0097	0.0081	0.067	0.0094	NA	0.028	0.18	0.027	NA

Location	***Notification***	**Site Background**	**SB-139**	**SB-140**	**SB-141**	**SB-142**	**SB-143**	**SB-144**	**SB-145**	**SB-146**	**SB-147**	**SB-148**	**SB-149**	**SB-150**
Depth (ft, bgs)	***Concentrations***	**Concentrations**	**3-5**	**3-5**	**0-2**	**0-2**	**6-7**	**14-15**			**0-2**	**0-2**		**0-2**
Date Sampled			**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**	**6/21/2005**
PARAMETER, UNITS														
METALS (mg/kg)														
Arsenic	41	10	**28**	1.3	**12**	**120**	**30**	**40**	NA	NA	**21**	**22**	NA	4.5
Lead	400	84	46	22	71	**1300**	18	36	NA	NA	64	11	NA	**120**
SPLP METALS (mg/L)														
SPLP Arsenic			NA	NA	NA	0.02	<0.0052	<0.0052	NA	NA	NA	NA	NA	NA
SPLP Lead			NA	NA	NA	0.15	0.0082	<0.005	NA	NA	NA	NA	NA	NA

Notes:
mg/kg = milligrams per kilograms
mg/L = milligrams per liter
SPLP = Synthetic Precipitation Leaching Procedure USEPA Method 1312
Metals analyzed using USEPA Method 6010B
ft bgs = feet below ground surface
NA = Sample or constituent not analyzed
Bolded numbers exceed Site Background concentrations

Prepared by: L Smith 09/17/07
Checked by: R Quinn 10/10/07

Table 4.6: Summary of Arsenic and Lead Soil to Water Partition Coefficient Values

Calculation:	(A)	(B)	(C) = [(A)/(B)]
Sample Identification and Sample Depth in feet	**Total Arsenic Concentrations (mg/kg)**	**SPLP Arsenic Concentrations (mg/L)**	**Kd Values Arsenic (L/kg)**
SB-134 (13-15 ft)	1.2	na	na
SB-140 (3-5 ft)	1.3	na	na
SB-131 (3-5 ft)	1.8	na	na
SB-138 (3-5 ft)	4.2	na	na
SB-150 (0-2 ft)	4.5	na	na
SB-141 (0-2 ft)	12	na	na
SB-147 (0-2 ft)	21	na	na
SB-148 (0-2 ft)	**22**	na	na
SB-133 (0-2 ft)	23	0.021	1,095
SB-137 (0-2 ft)	25	0.0067	3,731
SB-139 (3-5 ft)	28	na	na
SB-143 (6-7 ft)	30	ND (<0.0052)	5,769
SB-135 (0-2 ft)	36	0.0069	5,217
SB-134 (8-10 ft)	39	ND (<0.0052)	7,500
SB-144 (14-15 ft)	40	ND (<0.0052)	7,692
SB-118 (0-2 ft)	53	ND (<0.0052)	10,192
SB-136 (3-5 ft)	73	ND (<0.0052)	14,038
SB-142 (0-2 ft)	120	0.02	6,000
SB-132 (14-15 ft)	460	ND (<0.0052)	88,462
SB-132 (3-5 ft)	730	ND (<0.0052)	140,385
SB-132 (12-13 ft)	1200	ND (<0.0052)	230,769
Geometric Mean	27.34		12,691

Calculation:	(A)	(B)	(C) = [(A)/(B)]
Sample Identification and Sample Depth in feet	**Total Lead Concentrations (mg/kg)**	**SPLP Lead Concentrations (mg/L)**	**Kd Values Lead (L/kg)**
SB-148 (0-2 ft)	11	na	na
SB-134 (13-15 ft)	14	na	na
SB-143 (6-7 ft)	18	0.0082	2,195
SB-131 (3-5 ft)	19	na	na
SB-132 (14-15 ft)	19	0.0081	2,346
SB-132 (12-13 ft)	20	0.0097	2,062
SB-138 (3-5 ft)	22	na	na
SB-140 (3-5 ft)	22	na	na
SB-134 (8-10 ft)	35	0.0094	3,723
SB-144 (14-15 ft)	36	ND (<0.005)	7,200
SB-139 (3-5 ft)	46	na	na
SB-147 (0-2 ft)	64	na	na
SB-141 (0-2 ft)	71	na	na
SB-132 (3-5 ft)	92	ND (<0.005)	18,400
SB-150 (0-2 ft)	**120**	na	na
SB-137 (0-2 ft)	200	0.027	7,407
SB-133 (0-2 ft)	270	0.067	4,030
SB-136 (3-5 ft)	340	0.18	1,889
SB-135 (0-2 ft)	360	0.028	12,857
SB-118 (0-2 ft)	540	0.015	36,000
SB-142 (0-2 ft)	1300	0.15	8,667
Geometric Mean	65.32		5,703

Notes:

na = not analyzed/not applicable
ND = Not detected
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
L/kg = liter per kilogram

Prepared by: L Smith 09/17/07
Checked by: R Quinn 10/10/07

Table 7.1a: Risk Reduction Standards for Soil - Types 1 and 2

HSRA-regulated Substance	Maximum Detected Concentrations (mg/kg)		Risk Reduction Standards (RRS)					
			Type 1			Type 2		
	Surface (a)	Soil (b)	RRS	Ref	Status	RRS	Ref	Status
1,1,1-Trichloroethane	0.009	--	20	D	C	***	***	***
2,4-Dinitrotoluene	7.5	--	0.66	B	E	0.0068	H	E
Aldrin	140	--	0.66	B	E	0.0082	H	E
alpha-BHC	960	41	0.66	B	E	0.00079	H	E
Anthracene	2	--	500	B	C	***	***	***
Antimony	37	--	4	A	E	2.7	H	E
Arsenic	1547	3300	20	A	E	6.1	F	E
Barium	2000	270	1000	B	E	130	H	E
Benzo(a)anthracene	32	2.9	5	B	E	1.8	H	E
Benzo(a)pyrene	3.6	3.8	1.6	B	E	0.24	H	E
Benzo(b)fluoranthene	2.9	2.2	5	B	C	***	***	***
Benzo(b/k)fluoranthene	12	--	5	B	E	1.4	H	E
Benzo(g,h,i)perylene	21	0.58	500	B	C	***	***	***
Benzo(k)fluoranthene	0.99	1.3	5	B	C	***	***	***
beta-BHC	930	10.6	0.66	B	E	0.0028	H	E
Chlordane	390	466	9.2	B	E	0.16	H	E
Chrysene	32	5.5	5	B	E	42	H	C
Copper	820	330	100	A	E	46	H	E
Cyanide	1.8	--	20	D	C	***	***	***
DDD	550	57	0.66	B	E	0.84	H	E
DDE	59	78	0.66	B	E	0.59	H	E
DDT	9100	774	0.66	B	E	0.85	H	E
delta-BHC	69	0.0427	25	F	E	0.0028	H	E
Dieldrin	590	6.6	0.66	B	E	0.004	H	E
Endrin	38	--	10	B	E	0.19	H	E
Fluoranthene	34	11	500	B	C	***	***	***
gamma-BHC (lindane)	2.1	33	0.66	B	E	0.0045	H	E
Heptachlor	210	6.2	0.66	B	E	0.033	H	E
Indeno(1,2,3)pyrene	2	--	5	B	C	***	***	***
Lead	7450	65300	75	A	E	120	H	E
Methoxychlor	0.067	0.08	10	B	C	***	***	***
Nickel	120	31.5	50	A	E	20	H	E
Phenanthrene	0.71	3.9	110	B	C	***	***	***
Pyrene	32	16	500	B	C	***	***	***
Silver	21	--	2	A	E	0.85	H	E
Sulfate	1200	850	NR	NA	NA	NR	NA	NA
Thallium	8.8	--	2	A	E	0.71	H	E
Toxaphene	1633	700	11	B	E	0.77	H	E
Zinc	3200	390	100	A	E	290	H	E

Notes:

mg/kg = milligrams per kilogram
Ref = Reference source for the RRS
-- = Substance not detected
* = Default to RRS for gamma-BHC (lindane)
*** = Substance concentration meets a more restrictive RRS
(a) Surface soil; defined under HSRA as 0 to 2 feet below ground surface
(b) Soil;defined under HSRA as any point above the uppermost groundwater zone; used here to mean other than surface soil
NR = Not regulated under HSRA
NA = Not applicable

A = Table 2, Appendix III of the HSRA Regulations
B = Appendix I of the HSRA regulations
C = Substance concentration meets the respective RRS
D = Type I ground-water standard times 100
E = Substance concentration exceeds the respective RRS
F = Calculated using RAGS Equation 6 (carcinogens)
G = Calculated using RAGS Equation 7 (non-carcinogens)
H = Leaching criteria
I = IEUBK model

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Table 7.1b: Risk Reduction Standards for Soil - Types 3 and 4

HSRA-regulated Substance	Maximum Detected Concentration (mg/kg)				Risk Reduction Standard (RRS)											
					Type 3				Type 4							
	On BFEL Property		On Railroad Property		Surface Soil (a)		Subsurface Soil (b)		Surface Soil (a) on BFEL property		Subsurface Soil (b) on BFEL property		Surface Soil (a) On railroad property		Subsurface Soil (b) On railroad property	
	Surface Soil (a)	Subsurface Soil (b)	Surface Soil (a)	Subsurface Soil (b)	RRS	Status	RRS	Status	RRS	Status	RRS	Status	RRS	Status	RRS	Status
2,4-Dinitrotoluene	7.5	--	--	--	0.66	E	0.66	na	6.9	E	6.9	na	0.066	na	0.066	na
Aldrin	140	--	--	--	0.66	E	0.66	na	13	E	13	na	0.15	na	0.15	na
alpha-BHC	960	7	0.023	2.2	0.66	E	0.66	E	1.7	E	1.7	E	0.014	***	0.014	E
Antimony	30	--	37	--	10	E	10	na	46	C	46	na	9.8	E	9.8	na
Arsenic	1,100	3,300	1,547	686	38	E	41	E	22	E	22	E	22	E	22	E
Barium	2,000	270	1,300	--	1,000	E	1,000	C	21,000	C	21,000	***	4,500	C	4,500	na
Benzo(a)anthracene	32	2.9	1.4	--	5	E	5	C	590	C	870	***	7.4	***	7.4	na
Benzo(a)pyrene	14	3.8	0.90	--	1.6	E	1.6	E	59	C	290	C	2.5	***	2.5	na
Benzo(b/k)fluoranthene	22	0.13	1.7	--	5	E	5	C	590	C	2,900	***	25	***	25	na
beta-BHC	930	11	0.4	--	0.66	E	0.66	E	5.8	E	5.8	E	0.049	***	0.049	na
Chlordane	390	5.3	67	466	9.2	E	9.2	C	87	E	87	***	2.9	E	2.9	E
Copper	800	330	820	--	1,500	C	1,500	C	3,500	***	3,500	***	770	***	770	na
DDD	550	2.3	3.7	3.8	0.66	E	0.66	E	1,800	C	1,800	C	15	C	15	C
DDE	94	4.3	24	78	0.66	E	0.66	E	1,200	C	1,200	C	11	E	11	E
DDT	9,100	555	11	774	0.66	E	0.66	E	310	E	430	E	15	C	15	E
delta-BHC	69	0.043	0.012	--	25	E	25	C	5.8	E	5.8	***	0.049	***	0.049	na
Dieldrin	590	6.6	0.51	0.22	0.66	E	0.66	E	4.5	E	4.5	E	0.038	***	0.038	***
Endrin	38	--	--	--	10	E	10	na	31	E	31	na	6.6	na	6.6	na
gamma-BHC (lindane)	14	3.3	1.8	18	0.66	E	0.66	E	4.5	E	4.5	C	0.08	E	0.08	E
Heptachlor	210	3.1	0.30	1.3	0.66	E	0.66	E	33	E	33	C	0.28	***	0.28	E
Lead	7,450	65,300	4,000	200	400	E	400	E	120	E	120	E	120	E	120	***
Nickel	120	32	82	--	420	C	420	C	3,300	***	3,300	***	700	***	700	na
Silver	14	--	21	--	10	E	10	na	110	C	110	na	23	C	23	na
Sulfate	1,200	850	--	--	25,000	C	25,000	C	25,000	***	25,000	***	25,000	na	25,000	na
Thallium	8.8	--	6.3	--	10	C	10	na	1.80	***	1.80	na	0.71	***	0.71	na
Toxaphene	1,633	38	190	700	11	E	11	E	250	E	250	C	2.1	E	2.1	E
Zinc	3200	390	1500	--	2800	E	2800	C	48000	C	48000	***	10,000	***	10,000	na

Notes:
mg/kg = milligrams per kilogram
Ref = Reference source for the RRS
-- = Substance not detected
na = not applicable since substance not detected above the detection limit

*** = Substance concentration meets a more restrictive RRS
(a) Surface soil; defined under HSRA as 0 to 2 feet below ground surface
(b) Soil; defined under HSRA as any point above the uppermost groundwater zone; used here to mean other than surface soil

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Table A-1
Type 1 through Type 4 Ground Water RRS, mg/L

Parameter	Type 1/ Type 3 (mg/L)		Type 2 Standard (mg/L) Adult Noncarcinogenic	Type 2 Standard (mg/L) Adult Carcinogenic	Type 2 Standard (mg/L) Child Noncarcinogenic	Type 2 Standard (mg/L) Child Carcinogenic	Type 2 Overall	Overall Residential	Type 4 Site-Specific (mg/L) Railroad Worker Noncarcinogenic	Type 4 Site-Specific (mg/L) Railroad Worker Carcinogenic	Railyard RRS	Type 4 Site-specific (mg/L) Construction Worker Noncarcinogenic	Type 4 Site-specific (mg/L) Construction Worker Carcinogenic	Construction RRS
METALS/INORGANICS														
Antimony	0.06	DL	0.015	ND	0.006	ND	**0.0063**	**0.060**	0.22	ND	**0.22**	1.0	ND	**1.0**
Arsenic	0.01		0.011	0.00057	0.005	0.0012	**0.00057**	**0.010**	0.16	0.010	**0.010**	0.77	1.2	**0.77**
Barium	2.0		7.3	ND	3.1	ND	**3.1**	**3.1**	109	ND	**109**	510	ND	**510**
Copper	1.3		1.5	ND	0.6	ND	**0.63**	**1.3**	22	ND	**22**	100	ND	**100**
Cyanide	0.2		0.022	ND	0.0094	ND	**0.0094**	**0.20**	0.33	ND	**0.33**	1.5	ND	**1.5**
Lead	0.015		ND	ND	ND	ND	**ND**	**0.015**	ND	ND	**0.015**	ND	ND	**0.015**
Nickel (soluble salts)	0.1		0.73	ND	0.31	ND	**0.31**	**0.31**	11	ND	**11**	51	ND	**51**
Nitrate	10 (NR)	MCL	58	ND	25	ND	**25**	**25**	870	ND	**870**	4088	ND	**4088**
Silver	0.1		0.18	ND	0.08	ND	**0.078**	**0.10**	2.7	ND	**2.7**	13	ND	**13**
Sulfate	250 (NR)	SMCL	ND	ND	ND	ND	**ND**	**250**	ND	ND	**ND**	ND	ND	**250**
Thallium	0.01	DL	0.00037	ND	0.00016	ND	**0.00016**	**0.010**	0.0054	ND	**0.0054**	0.026	ND	**0.026**
Zinc	2.0		11	ND	4.7	ND	**4.7**	**5**	160	ND	**160**	770	ND	**770**
VOCs/SVOCs														
1,1,1-Trichloroethane	0.2		9.0	ND	2.7	ND	**2.7**	**2.7**	71	ND	**71**	28	ND	**28**
2,4-Dinitrotoluene	0.005	DL	0.073	0.0027	0.031	0.0059	**0.0027**	**0.005**	1.1	0.049	**0.049**	5.1	5.8	**5.1**
PAHs														
Anthracene	0.005	DL	11	ND	5	ND	**4.7**	**4.7**	160	ND	**160**	770	ND	**770**
Benzo(a)anthracene	0.005	DL	ND	0.0012	ND	0.0025	**0.0012**	**0.005**	ND	0.021	**0.021**	ND	2.5	**2.5**
Benzo(a)pyrene	0.0002		ND	0.00012	ND	0.00025	**0.00012**	**0.0002**	ND	0.0021	**0.0021**	ND	0.25	**0.25**
Benzo(b)fluoranthene	0.0002		ND	0.0012	ND	0.0025	**0.0012**	**0.0012**	ND	0.021	**0.021**	ND	2.5	**2.5**
Benzo(ghi)perylene	0.005	DL	ND	ND	ND	ND	**ND**	**0.005**	ND	ND	**0.005**	ND	ND	**0.005**
Benzo(k)fluoranthene	0.005	DL	ND	0.012	ND	0.025	**0.012**	**0.012**	ND	0.21	**0.21**	ND	25	**25**
Chrysene	0.005	DL	ND	0.12	ND	0.25	**0.12**	**0.12**	ND	2.1	**2.1**	ND	245	**245**
Fluoranthene	1.0		1.5	ND	0.6	ND	**0.63**	**1.0**	22	ND	**22**	100	ND	**100**
Indeno(1,2,3-cd)pyrene	0.0004		ND	0.0012	ND	0.0025	**0.0012**	**0.0012**	ND	0.021	**0.021**	ND	2.5	**2.5**
Phenanthrene	0.005	DL	ND	ND	ND	ND	**ND**	**0.005**	ND	ND	**0.005**	ND	ND	**0.005**
Pyrene	1.0		1.1	ND	0.5	ND	**0.47**	**1.0**	16	ND	**16**	77	ND	**77**
PESTICIDES														
Aldrin	0.00002		0.0011	0.000050	0.0005	0.00011	**0.000050**	**0.00005**	0.016	0.00090	**0.0009**	0.077	0.11	**0.077**
alpha-HCH (BHC)	0.00005	DL	0.29	0.00014	0.13	0.0003	**0.00014**	**0.00014**	4.3	0.0024	**0.0024**	20	0.28	**0.28**
beta-HCH (BHC)	0.00005	DL	ND	0.00047	ND	0.0010	**0.00047**	**0.00047**	ND	0.0085	**0.0085**	ND	0.99	**0.99**
delta-HCH (technical BHC)	0.00005	DL	ND	0.00047	ND	0.0010	**0.00047**	**0.00047**	ND	0.0085	**0.0085**	ND	0.99	**0.99**
gamma-HCH (BHC)	0.0002		0.011	0.00077	0.005	0.0017	**0.00077**	**0.00077**	0.16	0.014	**0.014**	0.77	1.6	**0.77**
Chlordane	0.002		0.018	0.0024	0.008	0.0052	**0.0024**	**0.002**	0.27	0.043	**0.043**	1.3	5.1	**1.3**
DDD	0.0001		ND	0.0035	ND	0.0076	**0.0035**	**0.0035**	ND	0.063	**0.063**	ND	7.5	**7.5**
DDE	0.0001		ND	0.0025	ND	0.0054	**0.0025**	**0.0025**	ND	0.045	**0.045**	ND	5.3	**5.3**
DDT	0.0001		0.018	0.0025	0.008	0.0054	**0.0025**	**0.0025**	0.27	0.045	**0.045**	1.3	5.3	**1.3**
Dieldrin	0.0001	DL	0.0018	0.000053	0.0008	0.00011	**0.000053**	**0.000100**	0.027	0.00095	**0.0010**	0.13	0.11	**0.11**
Endrin	0.002		0.011	ND	0.005	ND	**0.0047**	**0.0047**	0.16	ND	**0.16**	0.77	ND	**0.77**
Heptachlor	0.0004		0.018	0.00019	0.008	0.0004	**0.00019**	**0.0004**	0.27	0.0034	**0.0034**	1.3	0.40	**0.40**
Methoxychlor	0.04		0.18	ND	0.08	ND	**0.078**	**0.078**	2.7	ND	**2.7**	13	ND	**13**
Toxaphene	0.005	DL	ND	0.00077	ND	0.0017	**0.00077**	**0.0050**	ND	0.014	**0.014**	ND	1.6	**1.6**

Source for Toxicity Values : Regional Screening Level Table, May 2012
DL Detection Limit
ND Toxicity values not available
NR Not Regulated
MCL Maximum Contaminant Level

Equation 2 (Noncarcinogens):

$$C = \frac{THI \times BW \times AT \times 365 days/year}{EF \times ED \times [(1/RfDi \times K \times IRa) + (1/RfDo \times IRw)]}$$

Equation 1 (Carcinogens):

$$C = \frac{TR \times BW \times AT \times 365 days/year}{EF \times ED \times [(SFi \times K \times IRa) + (SFo \times IRw)]}$$

Where:	Type 2 Adult	Type 2 Parameters Chilld	Type 4 Off-Site Railyard Worker Parameters	Type 4 On-Site Construction Worker Parameters
THI = Target Hazard Index =	1	1	1	1
BW = Body Weight =	70 kg	15 kg	70 kg	70 kg
AT = Averaging Time =	30 years (noncarc.); 70 (carcinogens)	6 years; 70 years (carc.)	25 years for noncarc. & 70 years for carc.	1 years for noncarc. & 70 years for carc.
EF = Exposure Frequency =	350 days/year	350 days/year	47 day/year	125 day/year
ED = Exposure Duration =	30 years	6 years	25 years	1 year
RfDi = Inhalation Reference Dose =	Chemical Specific	Chemical Specific	Chemical Specific	Chemical Specific
K = Volatilization Factor = 0.0005 x 1000 L/m3 =	0.5 L/m3	0.5 L/m3	0.5 L/m3	0.5 L/m3
IRa = Inhalation Rate for Air =	20 m3/day	15 m3/day	20 m3/day	20 m3/day
RfDo = Oral Reference Dose =	Chemical Specific	Chemical Specific	Chemical Specific	Chemical Specific
IRw = Ingestion Rate for Water =	2 L/day	1 L/day	1 L/day	0.08 L/day
TR = Target Risk =	0.00001	0.00001	0.00001	0.00001
CSFo = Oral Cancer Slope Factor =	Chemical Specific	Chemical Specific	Chemical Specific	Chemical Specific
CSFi = Inhalation Cancer Slope Factor =	Chemical Specific	Chemical Specific	Chemical Specific	Chemical Specific

ND Toxicity values not available

Revised by: LWC 7/26/12
Checked by: LMS 7/27/12

Table A-2
Type 1 and 3 Soil Calculations, mg/kg

SUBSTANCE	Volatilization Factor (m^3/kg)	Table 2 Appendix III	Appendix I	Type 1 GW x 100	Number 1	Risk-Based Residential Type 1 NC-Type 1	C-Type 1	Type 1 RRS	Least of 1,2, & 3	Overall Type 1 RRS	Risk-Based Nonresidential Type 3 NC-Type 3	C-Type 3	Risk-based Soil Type 3 RRS	Subsurface Soil Type 3 RRS	Surface Soil Type 3 RRS
INORGANICS/METALS															
Antimony	0.0E+00	4.0E+00	1.0E+01	6.0E-01	1.0E+01	2.6E+02	--	2.6E+02	1.0E+01	4.0E+00	8.2E+02	--	8.2E+02	1.0E+01	1.0E+01
Arsenic	0.0E+00	2.0E+01	4.1E+01	1.0E+00	4.1E+01	1.9E+02	1.0E+01	1.0E+01	1.0E+01	2.0E+01	6.1E+02	3.8E+01	3.8E+01	4.1E+01	3.8E+01
Barium	0.0E+00	1.0E+03	5.0E+02	2.0E+02	5.0E+02	1.2E+05	--	1.2E+05	5.0E+02	1.0E+03	3.6E+05	--	3.6E+05	1.0E+03	1.0E+03
Copper	0.0E+00	1.0E+02	1.5E+03	1.3E+02	1.5E+03	2.6E+04	--	2.6E+04	1.5E+03	1.0E+02	8.2E+04	--	8.2E+04	1.5E+03	1.5E+03
Cyanides (free)	0.0E+00	--	1.0E+01	2.0E+01	2.0E+01	3.8E+02	--	3.8E+02	2.0E+01	2.0E+01	1.2E+03	--	1.2E+03	2.0E+01	2.0E+01
Lead	0.0E+00	7.5E+01	4.0E+02	1.5E+00	4.0E+02	--	--	4.0E+02	4.0E+02	7.5E+01	--	--	--	4.0E+02	4.0E+02
Nickel	0.0E+00	5.0E+01	4.2E+02	1.0E+01	4.2E+02	1.3E+04	5.8E+05	1.3E+04	4.2E+02	5.0E+01	3.8E+04	7.3E+05	3.8E+04	4.2E+02	4.2E+02
Silver	0.0E+00	2.0E+00	1.0E+01	1.0E+01	1.0E+01	3.2E+03	--	3.2E+03	1.0E+01	2.0E+00	1.0E+04	--	1.0E+04	1.0E+01	1.0E+01
Sulfate (Not Regulated)	0.0E+00	--	--	2.5E+04	2.5E+04	--	--	--	2.5E+04	2.5E+04	--	--	--	2.5E+04	2.5E+04
Thallium	0.0E+00	2.0E+00	1.0E+01	1.0E+00	1.0E+01	6.4E+00	--	6.4E+00	6.4E+00	2.0E+00	2.0E+01	--	2.0E+01	1.0E+01	1.0E+01
Zinc	0.0E+00	1.0E+02	2.8E+03	2.0E+02	2.8E+03	1.9E+05	--	1.9E+05	2.8E+03	1.0E+02	6.1E+05	--	6.1E+05	2.8E+03	2.8E+03
VOCs/SVOCs															
1,1,1-Trichloroethane	1.2E+03	--	5.4E+00	2.0E+01	2.0E+01	8.1E+03	--	8.1E+03	2.0E+01	2.0E+01	8.5E+03	--	8.5E+03	2.0E+01	2.0E+01
2,4-Dinitrotoluene	0.0E+00	--	6.6E-01	5.0E-01	6.6E-01	1.3E+03	4.8E+01	4.8E+01	6.6E-01	6.6E-01	4.1E+03	1.8E+02	1.8E+02	6.6E-01	6.6E-01
PAHs															
Anthracene	2.3E+06	--	5.0E+02	5.0E-01	5.0E+02	1.9E+05	--	1.9E+05	5.0E+02	5.0E+02	6.1E+05	--	6.1E+05	5.0E+02	5.0E+02
Benzo(a)anthracene	0.0E+00	--	5.0E+00	1.0E-02	5.0E+00	--	2.0E+01	2.0E+01	5.0E+00	5.0E+00	--	7.8E+01	7.8E+01	5.0E+00	5.0E+00
Benzo(a)pyrene	0.0E+00	--	1.6E+00	2.0E-02	1.6E+00	--	2.0E+00	2.0E+00	1.6E+00	1.6E+00	--	7.8E+00	7.8E+00	1.6E+00	1.6E+00
Benzo(b)fluoranthene	0.0E+00	--	5.0E+00	2.0E-02	5.0E+00	--	2.0E+01	2.0E+01	5.0E+00	5.0E+00	--	7.8E+01	7.8E+01	5.0E+00	5.0E+00
Benzo(ghi)perylene	0.0E+00	--	5.0E+02	5.0E-01	5.0E+02	ND	--	ND	5.0E+02	5.0E+02	ND	--	ND	5.0E+02	5.0E+02
Benzo(k)fluoranthene	0.0E+00	--	5.0E+00	5.0E-01	5.0E+00	--	2.0E+02	2.0E+02	5.0E+00	5.0E+00	--	7.8E+02	7.8E+02	5.0E+00	5.0E+00
Chrysene	0.0E+00	--	5.0E+00	5.0E-01	5.0E+00	--	2.0E+03	2.0E+03	5.0E+00	5.0E+00	--	7.8E+03	7.8E+03	5.0E+00	5.0E+00
Fluoranthene	0.0E+00	--	5.0E+02	1.0E+02	5.0E+02	2.6E+04	--	2.6E+04	5.0E+02	5.0E+02	8.2E+04	--	8.2E+04	5.0E+02	5.0E+02
Indeno(1,2,3-cd)pyrene	0.0E+00	--	5.0E+00	4.0E-02	5.0E+00	--	2.0E+01	2.0E+01	5.0E+00	5.0E+00	--	7.8E+01	7.8E+01	5.0E+00	5.0E+00
Phenanthrene	1.3E+06	--	1.1E+02	5.0E-01	1.1E+02	ND	--	ND	1.1E+02	1.1E+02	ND	--	ND	1.1E+02	1.1E+02
Pyrene	0.0E+00	--	5.0E+02	1.0E+02	5.0E+02	1.9E+04	--	1.9E+04	5.0E+02	5.0E+02	6.1E+04	--	6.1E+04	5.0E+02	5.0E+02
PESTICIDES															
Aldrin	0.0E+00	--	6.6E-01	2.0E-03	6.6E-01	1.9E+01	8.8E-01	8.8E-01	6.6E-01	6.6E-01	6.1E+01	3.4E+00	3.4E+00	6.6E-01	6.6E-01
alpha-BHC	0.0E+00	--	6.6E-01	2.5E-03	6.6E-01	5.1E+09	2.4E+00	2.4E+00	6.6E-01	6.6E-01	1.6E+10	9.1E+00	9.1E+00	6.6E-01	6.6E-01
beta-BHC	0.0E+00	--	6.6E-01	2.5E-03	6.6E-01	--	8.3E+01	8.3E+01	6.6E-01	6.6E-01	--	3.2E+01	3.2E+01	6.6E-01	6.6E-01
delta-BHC	0.0E+00	--	2.5E+01	2.5E-03	2.5E+01	--	8.3E+01	8.3E+01	2.5E+01	2.5E+01	--	3.2E+01	3.2E+01	2.5E+01	2.5E+01
gamma-BHC (Lindane)	0.0E+00	--	6.6E-01	2.0E-02	6.6E-01	1.9E+02	1.4E+01	1.4E+01	6.6E-01	6.6E-01	6.1E+02	5.2E+01	5.2E+01	6.6E-01	6.6E-01
Chlordane	0.0E+00	--	9.2E+00	2.0E-01	9.2E+00	3.2E+02	4.3E+01	4.3E+01	9.2E+00	9.2E+00	1.0E+03	1.6E+02	1.6E+02	9.2E+00	9.2E+00
DDD	0.0E+00	--	6.6E-01	1.0E-02	6.6E-01	--	6.2E+01	6.2E+01	6.6E-01	6.6E-01	--	2.4E+02	2.4E+02	6.6E-01	6.6E-01
DDE	0.0E+00	--	6.6E-01	1.0E-02	6.6E-01	--	4.4E+01	4.4E+01	6.6E-01	6.6E-01	--	1.7E+02	1.7E+02	6.6E-01	6.6E-01
DDT	0.0E+00	--	6.6E-01	1.0E-02	6.6E-01	3.2E+02	4.4E+01	4.4E+01	6.6E-01	6.6E-01	1.0E+03	1.7E+02	1.7E+02	6.6E-01	6.6E-01
Dieldrin	0.0E+00	--	6.6E-01	2.0E-03	6.6E-01	3.2E+01	9.3E-01	9.3E-01	6.6E-01	6.6E-01	1.0E+02	3.6E+00	3.6E+00	6.6E-01	6.6E-01
Endrin	0.0E+00	--	1.0E+01	2.0E-01	1.0E+01	1.9E+02	--	1.9E+02	1.0E+01	1.0E+01	6.1E+02	--	6.1E+02	1.0E+01	1.0E+01
Heptachlor	0.0E+00	--	6.6E-01	4.0E-02	6.6E-01	3.2E+02	3.3E+00	3.3E+00	6.6E-01	6.6E-01	1.0E+03	1.3E+01	1.3E+01	6.6E-01	6.6E-01
Methoxychlor	0.0E+00	--	1.0E+01	4.0E+00	1.0E+01	3.2E+03	--	3.2E+03	1.0E+01	1.0E+01	1.0E+04	--	1.0E+04	1.0E+01	1.0E+01
Toxaphene	0.0E+00	--	1.1E+01	3.0E-01	1.1E+01	--	1.4E+01	1.4E+01	1.1E+01	1.1E+01	--	5.2E+01	5.2E+01	1.1E+01	1.1E+01

Notes:

NC	Noncarcinogen
C	Carcinogen
RRS	Risk Reduction Standard
GW	Groundwater

Exposure Parameters	Residential Type 1	Nonresidential Type 3	Unit
Total Hazard Index (THI)	1	1	unitless
Target Risk (TR)	1.E-05	1.E-05	unitless
Body Weight (BW)	70	70	kg
Averaging Time, Carcinogen (ATc)	70	70	yrs
Averaging Time, Noncarcinogen (ATn)	30.0	25.0	yrs
Exposure Duration (ED)	30.0	25.0	yrs
Exposure Frequency (EF)	350	250	days/yr
Soil Ingestion Rate (IRs)	114	50	mg/day
Air Inhalation Rate (InhR)	15	20	m^3/day
Particulate Emission Factor (PEF)	4.63E+09	4.63E+09	m^3/kg
Conversion Factor (CF)	1.E-06	1.E-06	kg/mg
Volatilization Factor (K)	Chemical-specific	Chemical-specific	m^3/kg

Noncarcinogenic Exposure

$$C = \frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/K + 1/PEF) \times InhR) + (1/RfDo}$$

Carcinogenic Exposure

$$C = \frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/K + 1/PEF) \times IRa) + (SFo \times IRw)]}$$

Prepared by:LWC 7/26/12
Checked by: LMS 7/27/12

Table A-3
Type 2 Soil Calculations, mg/kg

SUBSTANCE	Volatilization Factor (m^3/kg)	Residential Leaching	Residential Child NC-Type 2	Residential Child C-Type 2	Residential Child Type 2 RRS	Residential Adult NC-Type 2	Residential Adult C-Type 2	Residential Adult Type 2 RRS	Overall Type 2 RRS
INORGANICS/METALS									
Antimony	0.0E+00	2.7E+00	3.1E+01	--	3.1E+01	2.9E+02	--	2.9E+02	2.7E+00
Arsenic	0.0E+00	2.2E+01	2.3E+01	6.1E+00	6.1E+00	2.2E+02	1.1E+01	1.1E+01	6.1E+00
Barium	0.0E+00	1.3E+02	1.5E+04	--	1.5E+04	1.4E+05	--	1.4E+05	1.3E+02
Copper	0.0E+00	4.6E+01	3.1E+03	--	3.1E+03	2.9E+04	--	2.9E+04	4.6E+01
Cyanides	0.0E+00	2.0E+00	4.7E+01	--	4.7E+01	4.4E+02	--	4.4E+02	2.0E+00
Lead	0.0E+00	1.2E+02	3.3E+02	--	3.3E+02	--	--	--	1.2E+02
Nickel	0.0E+00	2.0E+01	1.5E+03	6.2E+05	1.5E+03	1.4E+04	4.3E+05	1.4E+04	2.0E+01
Silver	0.0E+00	8.5E-01	3.9E+02	--	3.9E+02	3.7E+03	--	3.7E+03	8.5E-01
Sulfate (Not Regulated)	0.0E+00	2.5E+04	--	--	--	--	--	--	2.5E+04
Thallium	0.0E+00	7.1E-01	--	--	--	--	--	--	7.1E-01
Zinc	0.0E+00	2.9E+02	2.3E+04	--	2.3E+04	2.2E+05	--	2.2E+05	2.9E+02
VOCs/SVOCs									
1,1,1-Trichloroethane	1.2E+03	9.3E-01	1.7E+03	--	1.7E+03	6.1E+03	--	6.1E+03	9.3E-01
2,4-Dinitrotoluene	0.0E+00	6.8E-03	1.6E+02	2.9E+01	2.9E+01	1.5E+03	5.5E+01	5.5E+01	6.8E-03
PAHs									
Anthracene	2.3E+06	1.5E+02	2.3E+04	--	2.3E+04	2.2E+05	--	2.2E+05	1.5E+02
Benzo(a)anthracene	0.0E+00	1.8E+00	--	1.2E+01	1.2E+01	--	2.3E+01	2.3E+01	1.8E+00
Benzo(a)pyrene	0.0E+00	2.4E-01	--	1.2E+00	1.2E+00	--	2.3E+00	2.3E+00	2.4E-01
Benzo(b)fluoranthene	0.0E+00	1.4E+00	--	1.2E+01	1.2E+01	--	2.3E+01	2.3E+01	1.4E+00
Benzo(ghi)perylene	0.0E+00	2.3E+03	--	--	--	--	--	--	2.3E+03
Benzo(k)fluoranthene	0.0E+00	1.4E+01	--	1.2E+02	1.2E+02	--	2.3E+02	2.3E+02	1.4E+01
Chrysene	0.0E+00	4.2E+01	--	1.2E+03	1.2E+03	--	2.3E+03	2.3E+03	4.2E+01
Fluoranthene	0.0E+00	1.1E+02	3.1E+03	--	3.1E+03	2.9E+04	--	2.9E+04	1.1E+02
Indeno(1,2,3-cd)pyrene	0.0E+00	4.6E+00	--	1.2E+01	1.2E+01	--	2.3E+01	2.3E+01	4.6E+00
Phenanthrene	1.3E+06	1.9E+01	--	--	--	--	--	--	1.9E+01
Pyrene	0.0E+00	1.1E+02	2.3E+03	--	2.3E+03	2.2E+04	--	2.2E+04	1.1E+02
PESTICIDES									
Aldrin	0.0E+00	8.2E-03	2.3E+00	5.4E-01	5.4E-01	2.2E+01	1.0E+00	1.0E+00	8.2E-03
alpha-BHC	0.0E+00	7.9E-04	6.3E+08	1.4E+00	1.4E+00	5.8E+09	2.7E+00	2.7E+00	7.9E-04
beta-BHC	0.0E+00	2.8E-03	--	5.1E+00	5.1E+00	--	9.5E+00	9.5E+00	2.8E-03
delta-BHC	0.0E+00	2.8E-03	--	5.1E+00	5.1E+00	--	9.5E+00	9.5E+00	2.8E-03
gamma-BHC (Lindane)	0.0E+00	4.5E-03	2.3E+01	8.3E+00	8.3E+00	2.2E+02	1.5E+01	1.5E+01	4.5E-03
Chlordane	0.0E+00	1.6E-01	3.9E+01	2.6E+01	2.6E+01	3.6E+02	4.9E+01	4.9E+01	1.6E-01
DDD	0.0E+00	8.4E-01	--	3.8E+01	3.8E+01	--	7.1E+01	7.1E+01	8.4E-01
DDE	0.0E+00	5.9E-01	--	2.7E+01	2.7E+01	--	5.0E+01	5.0E+01	5.9E-01
DDT	0.0E+00	8.5E-01	3.9E+01	2.7E+01	2.7E+01	3.7E+02	5.0E+01	5.0E+01	8.5E-01
Dieldrin	0.0E+00	4.0E-03	3.9E+00	5.7E-01	5.7E-01	3.7E+01	1.1E+00	1.1E+00	4.0E-03
Endrin	0.0E+00	1.9E-01	2.3E+01	--	2.3E+01	2.2E+02	--	2.2E+02	1.9E-01
Heptachlor	0.0E+00	3.3E-02	3.9E+01	2.0E+00	2.0E+00	3.7E+02	3.8E+00	3.8E+00	3.3E-02
Methoxychlor	0.0E+00	4.2E+00	3.9E+02	--	3.9E+02	3.7E+03	--	3.7E+03	4.2E+00
Toxaphene	0.0E+00	7.7E-01	--	8.3E+00	8.3E+00	--	1.5E+01	1.5E+01	7.7E-01

Notes:
NC Noncarcinogen
C Carcinogen
RRS Risk Reduction Standard
GW Groundwater

Exposure Parameters	Residential Child	Residential Adult
Total Hazard Index (THI)	1	1
Target Risk (TR)	1.E-05	1.E-05
Body Weight (BW)	15	70
Averaging Time, Carcinogen (ATc)	70	70
Averaging Time, Noncarcinogen (ATn)	6.0	30.0
Exposure Duration (ED)	6.0	30.0
Exposure Frequency (EF)	350	350
Soil Ingestion Rate (IRs)	200	100
Air Inhalation Rate (InhR)	15	20
Particulate Emission Factor (PEF)	4.63E+09	4.63E+09
Conversion Factor (CF)	1.E-06	1.E-06
Volatilization Factor (K)	Chemical-specific	Chemical-specific

Noncarcinogenic Exposure

$$C = \frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/K + 1/PEF) \times InhR) + (1/RfDo \times IRs)]}$$

Carcinogenic Exposure

$$C = \frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/K + 1/PEF) \times IRa) + (SFo \times IRw)]}$$

Revised by: LWC 7/26/12
Checked by: LMS 7/27/12

Table A-4
Type 4 Soil Calculations, mg/kg

SUBSTANCE	Volatilization Factor (m^3/kg)	CW Leaching Criteria (mg/kg) (a)	Construction Worker NC-Type 4	Construction Worker C-Type 4	Construction Worker Direct Contact Type 4 RRS	CW Surface Soil RRS	Subsurface Soil RRS (mg/kg) (b)	Rail Site Worker Leaching Criteria (mg/kg) (c)	Rail Site Worker NC-Type 4	Rail Site Worker C-Type 4	Rail Site Worker Direct Contact	SW Surface Soil RRS	SW Subsurface Soil (mg/kg) (d)
INORGANICS/METALS													
Antimony	0.00E+00	4.6E+01	2.5E+02	--	2.5E+02	4.6E+01	4.6E+01	9.8E+00	4.3E+03	--	4.3E+03	9.8E+00	9.8E+00
Arsenic	0.00E+00	2.2E+01	1.9E+02	2.9E+02	1.9E+02	2.2E+01	2.2E+01	2.2E+01	3.2E+03	2.0E+02	2.0E+02	2.2E+01	2.2E+01
Barium	0.00E+00	2.1E+04	1.2E+05	--	1.2E+05	2.1E+04	2.1E+04	4.5E+03	1.9E+06	--	1.9E+06	4.5E+03	4.5E+03
Copper	0.00E+00	3.5E+03	2.5E+04	--	2.5E+04	3.5E+03	3.5E+03	7.7E+02	4.3E+05	--	4.3E+05	7.7E+02	7.7E+02
Cyanides	0.00E+00	1.5E+01	3.7E+02	--	3.7E+02	1.5E+01	1.5E+01	3.0E+00	6.5E+03	--	6.5E+03	3.0E+00	3.0E+00
Lead	0.00E+00	1.2E+02	6.0E+02	--	6.0E+02	1.2E+02	1.2E+02	1.2E+02	3.0E+03	--	3.0E+03	1.2E+02	1.2E+02
Nickel	0.00E+00	3.3E+03	1.2E+04	3.6E+07	1.2E+04	3.3E+03	3.3E+03	7.0E+02	2.0E+05	3.9E+06	2.0E+05	7.0E+02	7.0E+02
Silver	0.00E+00	1.1E+02	3.1E+03	--	3.1E+03	1.1E+02	1.1E+02	2.3E+01	5.4E+04	--	5.4E+04	2.3E+01	2.3E+01
Sulfate (Not Regulated)	0.00E+00	2.5E+04	--	--	--	2.5E+04	2.5E+04	2.5E+04	--	--	--	2.5E+04	2.5E+04
Thallium	0.00E+00	1.8E+00	6.2E+00	--	6.2E+00	1.8E+00	1.8E+00	7.1E-01	--	--	--	7.1E-01	7.1E-01
Zinc	0.00E+00	4.8E+04	1.9E+05	--	1.9E+05	4.8E+04	4.8E+04	1.0E+04	3.3E+06	--	3.3E+06	1.0E+04	1.0E+04
VOCs/SVOCs													
1,1,1-Trichloroethane	1.55E+03	9.9E+00	2.2E+04	--	2.2E+04	9.9E+00	9.9E+00	2.0E+01	5.9E+04	--	5.9E+04	2.0E+01	2.0E+01
2,4-Dinitrotoluene	0.00E+00	6.9E+00	1.2E+03	1.4E+03	1.2E+03	6.9E+00	6.9E+00	6.6E-02	2.2E+04	9.8E+02	9.8E+02	6.6E-02	6.6E-02
PAHs													
Anthracene	7.33E+05	2.5E+04	1.9E+05	--	1.9E+05	2.5E+04	2.5E+04	5.3E+03	3.3E+06	--	3.3E+06	5.3E+03	5.3E+03
Benzo(a)anthracene	0.00E+00	8.7E+02	--	5.9E+02	5.9E+02	5.9E+02	8.7E+02	7.4E+00	--	4.2E+02	4.2E+02	7.4E+00	7.4E+00
Benzo(a)pyrene	0.00E+00	2.9E+02	--	5.9E+01	5.9E+01	5.9E+01	2.9E+02	2.5E+00	--	4.2E+01	4.2E+01	2.5E+00	2.5E+00
Benzo(b)fluoranthene	0.00E+00	2.9E+03	--	5.9E+02	5.9E+02	5.9E+02	2.9E+03	2.5E+01	--	4.2E+02	4.2E+02	2.5E+01	2.5E+01
Benzo(ghi)perylene	0.00E+00	2.3E+03	--	--	--	2.3E+03	2.3E+03	2.3E+03	--	--	--	2.3E+03	2.3E+03
Benzo(k)fluoranthene	0.00E+00	2.9E+04	--	5.9E+03	5.9E+03	5.9E+03	2.9E+04	2.5E+02	--	4.2E+03	4.2E+03	2.5E+02	2.5E+02
Chrysene	0.00E+00	8.8E+04	--	5.9E+04	5.9E+04	5.9E+04	8.8E+04	7.5E+02	--	4.2E+04	4.2E+04	7.5E+02	7.5E+02
Fluoranthene	0.00E+00	1.1E+04	2.5E+04	--	2.5E+04	1.1E+04	1.1E+04	2.4E+03	4.3E+05	--	4.3E+05	2.4E+03	2.4E+03
Indeno(1,2,3-cd)pyrene	0.00E+00	9.6E+03	--	5.9E+02	5.9E+02	5.9E+02	9.6E+03	8.1E+01	--	4.2E+02	4.2E+02	8.1E+01	8.1E+01
Phenanthrene	1.26E+06	1.9E+01	--	--	--	1.9E+01	1.9E+01	1.9E+01	--	--	--	1.9E+01	1.9E+01
Pyrene	0.00E+00	8.3E+03	1.9E+04	--	1.9E+04	8.3E+03	8.3E+03	1.8E+03	3.3E+05	--	3.3E+05	1.8E+03	1.8E+03
PESTICIDES													
Aldrin	0.00E+00	1.3E+01	1.9E+01	2.6E+01	1.9E+01	1.3E+01	1.3E+01	1.5E-01	3.3E+02	1.8E+01	1.8E+01	1.5E-01	1.5E-01
alpha-BHC	0.00E+00	1.7E+00	5.0E+09	6.9E+01	6.9E+01	1.7E+00	1.7E+00	1.4E-02	8.7E+10	4.8E+01	4.8E+01	1.4E-02	1.4E-02
beta-BHC	0.00E+00	5.8E+00	--	2.4E+02	2.4E+02	5.8E+00	5.8E+00	4.9E-02	--	1.7E+02	1.7E+02	4.9E-02	4.9E-02
delta-BHC	0.00E+00	5.8E+00	--	2.4E+02	2.4E+02	5.8E+00	5.8E+00	4.9E-02	--	1.7E+02	1.7E+02	4.9E-02	4.9E-02
gamma-BHC (Lindane)	0.00E+00	4.5E+00	1.9E+02	3.9E+02	1.9E+02	4.5E+00	4.5E+00	8.0E-02	3.3E+03	2.8E+02	2.8E+02	8.0E-02	8.0E-02
Chlordane	0.00E+00	8.7E+01	3.1E+02	1.2E+03	3.1E+02	8.7E+01	8.7E+01	2.9E+00	5.4E+03	8.7E+02	8.7E+02	2.9E+00	2.9E+00
DDD	0.00E+00	1.8E+03	--	1.8E+03	1.8E+03	1.8E+03	1.8E+03	1.5E+01	--	1.3E+03	1.3E+03	1.5E+01	1.5E+01
DDE	0.00E+00	1.2E+03	--	1.3E+03	1.3E+03	1.2E+03	1.2E+03	1.1E+01	--	9.0E+02	9.0E+02	1.1E+01	1.1E+01
DDT	0.00E+00	4.3E+02	3.1E+02	1.3E+03	3.1E+02	3.1E+02	4.3E+02	1.5E+01	5.4E+03	9.0E+02	9.0E+02	1.5E+01	1.5E+01
Dieldrin	0.00E+00	4.5E+00	3.1E+01	2.7E+01	2.7E+01	4.5E+00	4.5E+00	3.8E-02	5.4E+02	1.9E+01	1.9E+01	3.8E-02	3.8E-02
Endrin	0.00E+00	3.1E+01	1.9E+02	--	1.9E+02	3.1E+01	3.1E+01	6.6E+00	3.3E+03	--	3.3E+03	6.6E+00	6.6E+00
Heptachlor	0.00E+00	3.3E+01	3.1E+02	9.6E+01	9.6E+01	3.3E+01	3.3E+01	2.8E-01	5.4E+03	6.8E+01	6.8E+01	2.8E-01	2.8E-01
Methoxychlor	0.00E+00	6.9E+02	3.1E+03	--	3.1E+03	6.9E+02	6.9E+02	1.5E+02	5.4E+04	--	5.4E+04	1.5E+02	1.5E+02
Toxaphene	0.00E+00	2.5E+02	--	3.9E+02	3.9E+02	2.5E+02	2.5E+02	2.1E+00	--	2.8E+02	2.8E+02	2.1E+00	2.1E+00

Notes:

(a) Based on the higher of Type 1, Type 2, or site-specific Type 4 (construction worker) ground-water RRS, but no greater than 100,000 mg/kg.
(b) Lower of On-Site Leaching Criteria and Construction Worker soil RRS.
(c) Based on the higher of Type 1, Type 2, or site-specific Type 4 (railroad worker) ground-water RRS, but no greater than 100,000 mg/kg.
(d) Lower of Off-Site Leaching Criteria and Railroad Worker soil RRS.

NC Noncarcinogen
C Carcinogen
RRS Risk Reduction Standard
GW Groundwater

Exposure Parameters	Construction Worker	Rail Site Worker
Total Hazard Index (THI)	1	1
Target Risk (TR)	1.E-05	1.E-05
Body Weight (BW)	70	70
Averaging Time, Carcinogen (ATc)	70	70
Averaging Time, Noncarcinogen (ATn)	1.0	25.0
Exposure Duration (ED)	1.0	25.0
Exposure Frequency (EF)	125	47
Soil Ingestion Rate (IRs)	330	50
Air Inhalation Rate (InhR)	20	20
Particulate Emission Factor (PEF)	4.63E+09	4.63E+09
Conversion Factor (CF)	1.E-06	1.E-06
Volatilization Factor (K)	Chemical-specific	Chemical-specific

Noncarcinogenic Exposure

$$C = \frac{THI \times BW \times ATn \times 365 days/year}{EF \times ED \times [(1/RfDi \times (1/K + 1/PEF) \times InhR) + (1/RfDo \times IRs)]}$$

Carcinogenic Exposure

$$C = \frac{TR \times BW \times ATc \times 365 days/year}{EF \times ED \times [(SFi \times (1/K + 1/PEF) \times IRa) + (SFo \times IRw)]}$$

Revised by: LWC 7/26/12
Checked by: LMS 7/27/12

Table A-5
Toxicity Values for HSRA Soil Calculations

SUBSTANCE	RFDO	RFDI	CSFO	CSFI	CCLASS	Source
INORGANICS/METALS						
Antimony	4.00E-04	NA	NA	NA	ND	IRIS
Arsenic	3.00E-04	4.30E-06	1.50E+00	1.51E+01	A	IRIS, CAL EPA
Barium	2.00E-01	1.43E-04	NA	NA	D	IRIS, HEAST
Copper	4.00E-02	NA	NA	NA	D	HEAST
Cyanides (free)	6.00E-04	NA	NA	NA	D	IRIS
Lead	NA	NA	NA	NA	B2	IRIS
Nickel (soluble salts)	2.00E-02	2.60E-05	NA	9.10E-01	ND	IRIS, CAL EPA, ATSDR
Silver	5.00E-03	NA	NA	NA	D	IRIS
Sulfate (Not Regulated)	NA	NA	NA	NA	NA	IRIS
Thallium	1.00E-05	NA	NA	NA	D	PPRTV
Zinc	3.00E-01	NA	NA	NA	D	IRIS
VOCs/SVOCs						
1,1,1-Trichloroethane	2.00E+00	1.40E+00	NA	NA	D	IRIS
2,4-Dinitrotoluene	2.00E-03	NA	3.10E-01	3.10E-01	ND	IRIS, CAL EPA
PAHs						
Anthracene	3.00E-01	NA	NA	NA	D	IRIS
Benzo(a)anthracene	NA	NA	7.30E-01	3.90E-01	B2	NCEA, CAL EPA
Benzo(a)pyrene	NA	NA	7.30E+00	3.90E+00	B2	IRIS, CAL EPA
Benzo(b)fluoranthene	NA	NA	7.30E-01	3.90E-01	B2	NCEA, CAL EPA
Benzo(ghi)perylene	NA	NA	NA	NA	D	ND
Benzo(k)fluoranthene	NA	NA	7.30E-02	3.90E-01	B2	NCEA, CAL EPA
Chrysene	NA	NA	7.30E-03	3.90E-02	B2	NCEA, CAL EPA
Fluoranthene	4.00E-02	NA	NA	NA	D	IRIS
Indeno(1,2,3-cd)pyrene	NA	NA	7.30E-01	3.90E-01	B2	NCEA, CAL EPA
Phenanthrene	NA	NA	NA	NA	D	ND
Pyrene	3.00E-02	NA	NA	NA	D	IRIS
PESTICIDES						
Aldrin	3.00E-05	NA	1.70E+01	1.70E+01	B2	IRIS
alpha-BHC	8.00E+03	NA	6.30E+00	6.30E+00	B2	IRIS, ATSDR
beta-BHC	NA	NA	1.80E+00	1.90E+00	C	IRIS
delta-BHC	NA	NA	1.80E+00	1.80E+00	B2	IRIS
gamma-BHC (Lindane)	3.00E-04	NA	1.10E+00	1.10E+00	ND	IRIS, CAL EPA
Chlordane	5.00E-04	2.00E-04	3.50E-01	3.50E-01	B2	IRIS
DDD	NA	NA	2.40E-01	2.40E-01	B2	IRIS, CAL EPA
DDE	NA	NA	3.40E-01	3.40E-01	B2	IRIS, CAL EPA
DDT	5.00E-04	NA	3.40E-01	3.40E-01	B2	IRIS
Dieldrin	5.00E-05	NA	1.60E+01	1.60E+01	B2	IRIS
Endrin	3.00E-04	NA	NA	NA	D	IRIS
Heptachlor	5.00E-04	NA	4.50E+00	4.60E+00	B2	IRIS
Methoxychlor	5.00E-03	NA	NA	NA	D	IRIS
Toxaphene	NA	NA	1.10E+00	1.10E+00	B2	IRIS

Source: EPA Regional Screening Values May 2012 and IRIS, 2012.

Prepared by: LWC 7/26/12
Checked by: LMS 7/27/2012

Table A-6
SUMMARY
SOIL RRS

SUBSTANCE	Type 1 Soil RRS (mg/kg)	Type 2 Soil RRS (mg/kg)	Type 3 Subsurface Soil RRS (mg/kg)	Type 3 Surface Soil RRS (mg/kg)	Type 4 CW Surface Soil RRS (mg/kg)	Type 4 CW Subsurface Soil RRS (mg/kg)	Type 4 Rail SW Surface Soil RRS (mg/kg)	Type 4 Rail SW Subsurface Soil RRS (mg/kg)	Maximum Onsite Surface (a) (mg/kg)	Maximum Onsite Subsurface (b) (mg/kg)	Maximum Offsite Surface (c) (mg/kg)	Maximum Offsite Subsurface (d) (mg/kg)
INORGANICS/METALS												
Antimony	4.0E+00	2.7E+00	1.0E+01	1.0E+01	4.6E+01	4.6E+01	9.8E+00	9.8E+00	46	46	4	10
Arsenic	2.0E+01	6.1E+00	4.1E+01	3.8E+01	2.2E+01	2.2E+01	2.2E+01	2.2E+01	38	41	20	41
Barium	1.0E+03	1.3E+02	1.0E+03	1.0E+03	2.1E+04	2.1E+04	4.5E+03	4.5E+03	21012	21012	1000	4500
Copper	1.0E+02	4.6E+01	1.5E+03	1.5E+03	3.5E+03	3.5E+03	7.7E+02	7.7E+02	3520	3520	100	1500
Cyanides (free)	2.0E+01	2.0E+00	2.0E+01	2.0E+01	1.5E+01	1.5E+01	3.0E+00	3.0E+00	20	20	20	20
Lead	7.5E+01	1.2E+02	4.0E+02	4.0E+02	1.2E+02	1.2E+02	1.2E+02	1.2E+02	400	400	120	400
Nickel	5.0E+01	2.0E+01	4.2E+02	4.2E+02	3.3E+03	3.3E+03	7.0E+02	7.0E+02	3332	3332	50	700
Silver	2.0E+00	8.5E-01	1.0E+01	1.0E+01	1.1E+02	1.1E+02	2.3E+01	2.3E+01	109	109	2.0	23
Sulfate (Not Regulated)	2.5E+04	2.5E+04	2.5E+04	2.5E+04	2.5E+04	2.5E+04	2.5E+04	2.5E+04	25050	25050	25050	25050
Thallium	2.0E+00	7.1E-01	1.0E+01	1.0E+01	1.8E+00	1.8E+00	7.1E-01	7.1E-01	10	10	2.0	10
Zinc	1.0E+02	2.9E+02	2.8E+03	2.8E+03	4.8E+04	4.8E+04	1.0E+04	1.0E+04	47894	47894	292	10000
VOCs/SVOCs												
1,1,1-Trichloroethane	2.0E+01	9.3E-01	2.0E+01	2.0E+01	9.9E+00	9.9E+00	2.0E+01	2.0E+01	20	20	20	20
2,4-Dinitrotoluene	6.6E-01	6.8E-03	6.6E-01	6.6E-01	6.9E+00	6.9E+00	6.6E-02	6.6E-02	6.9	6.9	0.66	0.66
PAHs												
Anthracene	5.0E+02	1.5E+02	5.0E+02	5.0E+02	2.5E+04	2.5E+04	5.3E+03	5.3E+03	25349	25349	500	5267
Benzo(a)anthracene	5.0E+00	1.8E+00	5.0E+00	5.0E+00	5.9E+02	8.7E+02	7.4E+00	7.4E+00	594	867	5.0	7.4
Benzo(a)pyrene	1.6E+00	2.4E-01	1.6E+00	1.6E+00	5.9E+01	2.9E+02	2.5E+00	2.5E+00	59	288	1.6	2.5
Benzo(b)fluoranthene	5.0E+00	1.4E+00	5.0E+00	5.0E+00	5.9E+02	2.9E+03	2.5E+01	2.5E+01	594	2938	5.0	25
Benzo(ghi)perylene	5.0E+02	2.3E+03	5.0E+02	5.0E+02	2.3E+03	2.3E+03	2.3E+03	2.3E+03	2250	2250	2250	2250
Benzo(k)fluoranthene	5.0E+00	1.4E+01	5.0E+00	5.0E+00	5.9E+03	2.9E+04	2.5E+02	2.5E+02	5939	28788	14	245
Chrysene	5.0E+00	4.2E+01	5.0E+00	5.0E+00	5.9E+04	8.8E+04	7.5E+02	7.5E+02	59390	88494	42	753
Fluoranthene	5.0E+02	1.1E+02	5.0E+02	5.0E+02	1.1E+04	1.1E+04	2.4E+03	2.4E+03	11110	11110	500	2416
Indeno(1,2,3-cd)pyrene	5.0E+00	4.6E+00	5.0E+00	5.0E+00	5.9E+02	9.6E+03	8.1E+01	8.1E+01	594	9560	5	81
Phenanthrene	1.1E+02	1.9E+01	1.1E+02	1.1E+02	1.9E+01	1.9E+01	1.9E+01	1.9E+01	110	110	110	110
Pyrene	5.0E+02	1.1E+02	5.0E+02	5.0E+02	8.3E+03	8.3E+03	1.8E+03	1.8E+03	8346	8346	500	1776
PESTICIDES												
Aldrin	6.6E-01	8.2E-03	6.6E-01	6.6E-01	1.3E+01	1.3E+01	1.5E-01	1.5E-01	13	13	0.66	0.66
alpha-BHC	6.6E-01	7.9E-04	6.6E-01	6.6E-01	1.7E+00	1.7E+00	1.4E-02	1.4E-02	1.7	1.7	0.66	0.66
beta-BHC	6.6E-01	2.8E-03	6.6E-01	6.6E-01	5.8E+00	5.8E+00	4.9E-02	4.9E-02	5.8	5.8	0.66	0.66
delta-BHC	2.5E+01	2.8E-03	2.5E+01	2.5E+01	5.8E+00	5.8E+00	4.9E-02	4.9E-02	25	25	25	25
gamma-BHC (Lindane)	6.6E-01	4.5E-03	6.6E-01	6.6E-01	4.5E+00	4.5E+00	8.0E-02	8.0E-02	4.5	4.5	0.66	0.66
Chlordane	9.2E+00	1.6E-01	9.2E+00	9.2E+00	8.7E+01	8.7E+01	2.9E+00	2.9E+00	87	87	9.2	9.2
DDD	6.6E-01	8.4E-01	6.6E-01	6.6E-01	1.8E+03	1.8E+03	1.5E+01	1.5E+01	1760	1760	0.84	15
DDE	6.6E-01	5.9E-01	6.6E-01	6.6E-01	1.2E+03	1.2E+03	1.1E+01	1.1E+01	1242	1242	0.66	11
DDT	6.6E-01	8.5E-01	6.6E-01	6.6E-01	3.1E+02	4.3E+02	1.5E+01	1.5E+01	310	432	0.85	15
Dieldrin	6.6E-01	4.0E-03	6.6E-01	6.6E-01	4.5E+00	4.5E+00	3.8E-02	3.8E-02	4.5	4.5	0.66	0.66
Endrin	1.0E+01	1.9E-01	1.0E+01	1.0E+01	3.1E+01	3.1E+01	6.6E+00	6.6E+00	31	31	10	10
Heptachlor	6.6E-01	3.3E-02	6.6E-01	6.6E-01	3.3E+01	3.3E+01	2.8E-01	2.8E-01	33	33	0.66	0.66
Methoxychlor	1.0E+01	4.2E+00	1.0E+01	1.0E+01	6.9E+02	6.9E+02	1.5E+02	1.5E+02	690	690	10	147
Toxaphene	1.1E+01	7.7E-01	1.1E+01	1.1E+01	2.5E+02	2.5E+02	2.1E+00	2.1E+00	251	251	11	11

(a) Maximum of Type 1, Type 2, and Type 3 and Type 4 CW surface soil RRS
(b) Maximum of Type 1, Type 2, and Type 3 and Type 4 CW subsurface soil RRS
(c) Maximum of Type 1 and Type 2
(d) Maximum of Type 1, Type 2 and Type 3 and Type 4 Rail Site Worker subsurface soil RRS.

Revised by:LWC 7/26/12
Checked by: LMS 7/27/12

Table A-7
Soil to Ground water Leachability

	K_d (a) (L/kg)	K_{oc} (L/kg)	Source	$Ø_w$	Øa	H' (unitless)	Øw+Øa*H'/$Þ_b$	Groundwater Type 1/3 RRS	C_w*1	Pathway Type 1/3 C_s (mg/kg)	Groundwater Type 2 RRS	C_w*1	Pathway Type 2 C_s	Residential Soil Leaching Criteria	Off-Property Groundwater Type 4 RRS (c) (C_w, mg/L)	C_w*1	Pathway Type 4 C_s (mg/kg)	Off-Property Soil Leaching Criteria	On-Property Groundwater Type 4 RRS (d) (C_w, mg/L)	C_w*1	Pathway Type 4 C_s (mg/kg)	On-Property Soil Leaching Criteria
METALS/INORGANICS																						
Antimony	4.50E+01		RSL	0.3	0.13	0.00E+00	0.2	6.0E-02	6.0E-02	2.7E+00	6.3E-03	6.3E-03	2.8E-01	2.7E+00	2.2E-01	2.2E-01	9.8E+00	9.8E+00	1.0E+00	1.0E+00	4.6E+01	4.6E+01
Arsenic	(e)		Site	0.3	0.13	0.00E+00	0.2	1.0E-02	1.0E-02	2.2E+01	5.7E-04	5.7E-04	2.2E+01	2.2E+01	1.0E-02	1.0E-02	2.2E+01	2.2E+01	7.7E-01	7.7E-01	2.2E+01	2.2E+01
Barium	4.10E+01		RSL	0.3	0.13	0.00E+00	0.2	2.0E+00	2.0E+00	8.2E+01	3.1E+00	3.1E+00	1.3E+02	1.3E+02	1.1E+02	1.1E+02	4.5E+03	4.5E+03	5.1E+02	5.1E+02	2.1E+04	2.1E+04
Copper	3.50E+01		RSL	0.3	0.13	0.00E+00	0.2	1.3E+00	1.3E+00	4.6E+01	6.3E-01	6.3E-01	2.2E+01	4.6E+01	2.2E+01	2.2E+01	7.7E+02	7.7E+02	1.0E+02	1.0E+02	3.5E+03	3.5E+03
Cyanide	9.90E+00		RSL	0.3	0.13	0.00E+00	0.2	2.0E-01	2.0E-01	2.0E+00	9.4E-03	9.4E-03	9.5E-02	2.0E+00	3.3E-01	3.3E-01	3.0E+00	3.0E+00	1.5E+00	1.5E+00	1.5E+01	1.5E+01
Lead	(e)		Site	0.3	0.13	0.00E+00	0.2	1.5E-02	1.5E-02	1.2E+02	ND	NA	NA	1.2E+02	1.5E-02	1.5E-02	1.2E+02	1.2E+02	1.5E-02	1.5E-02	1.2E+02	1.2E+02
Nickel	6.50E+01		RSL	0.3	0.13	0.00E+00	0.2	1.0E-01	1.0E-01	6.5E+00	3.1E-01	3.1E-01	2.0E+01	2.0E+01	1.1E+01	1.1E+01	7.0E+02	7.0E+02	5.1E+01	5.1E+01	3.3E+03	3.3E+03
Silver	8.30E+00		RSL	0.3	0.13	0.00E+00	0.2	1.0E-01	1.0E-01	8.5E-01	7.8E-02	7.8E-02	6.6E-01	8.5E-01	2.7E+00	2.7E+00	2.3E+01	2.3E+01	1.3E+01	1.3E+01	1.1E+02	1.1E+02
Sulfate (Not Regulated)	1.00E+02		(f)	0.3	0.13	0.00E+00	0.2	2.5E+02	2.5E+02	2.5E+04	ND	ND	ND	2.5E+04	ND	ND	ND	2.5E+04	2.5E+02	2.5E+02	2.5E+04	2.5E+04
Thallium	7.10E+01		RSL	0.3	0.13	0.00E+00	0.2	1.0E-02	1.0E-02	7.1E-01	1.6E-04	1.6E-04	1.1E-02	7.1E-01	5.4E-03	5.4E-03	3.9E-01	7.1E-01	2.6E-02	2.6E-02	1.8E+00	1.8E+00
Zinc	6.20E+01		RSL	0.3	0.13	0.00E+00	0.2	2.0E+00	2.0E+00	1.2E+02	4.7E+00	4.7E+00	2.9E+02	2.9E+02	1.6E+02	1.6E+02	1.0E+04	1.0E+04	7.7E+02	7.7E+02	4.8E+04	4.8E+04
VOCS																						
1,1,1-Trichloroethane	8.78E-02	4.39E+01	RSL	0.3	0.13	7.00E-01	0.2607	2.0E-01	2.0E-01	7.0E-02	2.7E+00	2.7E+00	9.3E-01	9.3E-01	7.1E+01	7.1E+01	2.0E+01	2.0E+01	2.8E+01	2.8E+01	9.9E+00	9.9E+00
2,4-Dinitrotoluene	1.15E+00	5.76E+02	RSL	0.3	0.13	2.20E-06	0.2000	5.0E-03	5.0E-03	6.8E-03	2.7E-03	2.7E-03	3.7E-03	6.8E-03	4.9E-02	4.9E-02	6.6E-02	6.6E-02	5.1E+00	5.1E+00	6.9E+00	6.9E+00
PAHs																						
Anthracene	3.27E+01	1.64E+04	RSL	0.3	0.13	2.30E-03	0.2002	5.0E-03	5.0E-03	1.6E-01	4.7E+00	4.7E+00	1.5E+02	1.5E+02	1.6E+02	1.6E+02	5.3E+03	5.3E+03	7.7E+02	7.7E+02	2.5E+04	2.5E+04
Benzo(a)anthracene	3.54E+02	1.77E+05	RSL	0.3	0.13	4.90E-04	0.2000	5.0E-03	5.0E-03	1.8E+00	1.2E-03	1.2E-03	4.1E-01	1.8E+00	2.1E-02	2.1E-02	7.4E+00	7.4E+00	2.5E+00	2.5E+00	8.7E+02	8.7E+02
Benzo(a)pyrene	1.17E+03	5.87E+05	RSL	0.3	0.13	1.90E-05	0.2000	2.0E-04	2.0E-04	2.4E-01	1.2E-04	1.2E-04	1.4E-01	2.4E-01	2.1E-03	2.1E-03	2.5E+00	2.5E+00	2.5E-01	2.5E-01	2.9E+02	2.9E+02
Benzo(b)fluoranthene	1.20E+03	5.99E+05	RSL	0.3	0.13	2.70E-05	0.2000	2.0E-04	2.0E-04	2.4E-01	1.2E-03	1.2E-03	1.4E+00	1.4E+00	2.1E-02	2.1E-02	2.5E+01	2.5E+01	2.5E+00	2.5E+00	2.9E+03	2.9E+03
Benzo(g,h,i)perylene	4.50E+05	2.25E+08	SCDM	0.3	0.13	5.74E-06	0.2000	5.0E-03	5.0E-03	2.3E+03	ND	ND	ND	2.3E+03	5.0E-03	5.0E-03	2.3E+03	2.3E+03	5.0E-03	5.0E-03	2.3E+03	2.3E+03
Benzo(k)fluoranthene	1.17E+03	5.87E+05	RSL	0.3	0.13	2.40E-05	0.2000	5.0E-03	5.0E-03	5.9E+00	1.2E-02	1.2E-02	1.4E+01	1.4E+01	2.1E-01	2.1E-01	2.5E+02	2.5E+02	2.5E+01	2.5E+01	2.9E+04	2.9E+04
Chrysene	3.61E+02	1.81E+05	RSL	0.3	0.13	2.10E-04	0.2000	5.0E-03	5.0E-03	1.8E+00	1.2E-01	1.2E-01	4.2E+01	4.2E+01	2.1E+00	2.1E+00	7.5E+02	7.5E+02	2.5E+02	2.5E+02	8.8E+04	8.8E+04
Fluoranthene	1.11E+02	5.55E+04	RSL	0.3	0.13	3.60E-04	0.2000	1.0E+00	1.0E+00	1.1E+02	6.3E-01	6.3E-01	7.0E+01	1.1E+02	2.2E+01	2.2E+01	2.4E+03	2.4E+03	1.0E+02	1.0E+02	1.1E+04	1.1E+04
Indeno(1,2,3-cd)pyrene	3.90E+03	1.95E+06	RSL	0.3	0.13	1.40E-05	0.2000	4.0E-04	4.0E-04	1.6E+00	1.2E-03	1.2E-03	4.6E+00	4.6E+00	2.1E-02	2.1E-02	8.1E+01	8.1E+01	2.5E+00	2.5E+00	9.6E+03	9.6E+03
Phenanthrene	3.70E+03	1.85E+06	SCDM	0.3	0.13	9.43E-04	0.2001	5.0E-03	5.0E-03	1.9E+01	ND	ND	ND	1.9E+01	5.0E-03	5.0E-03	1.9E+01	1.9E+01	5.0E-03	5.0E-03	1.9E+01	1.9E+01
Pyrene	1.09E+02	5.43E+04	RSL	0.3	0.13	4.90E-04	0.2000	1.0E+00	1.0E+00	1.1E+02	4.7E-01	4.7E-01	5.1E+01	1.1E+02	1.6E+01	1.6E+01	1.8E+03	1.8E+03	7.7E+01	7.7E+01	8.3E+03	8.3E+03
PESTICIDES																						
Aldrin	1.64E+02	8.20E+04	RSL	0.3	0.13	1.80E-03	0.2002	2.0E-05	2.0E-05	3.3E-03	5.0E-05	5.0E-05	8.2E-03	8.2E-03	9.0E-04	9.0E-04	1.5E-01	1.5E-01	7.7E-02	7.7E-02	1.3E+01	1.3E+01
alpha-HCH	5.61E+00	2.81E+03	RSL	0.3	0.13	2.10E-04	0.2000	5.0E-05	5.0E-05	2.9E-04	1.4E-04	1.4E-04	7.9E-04	7.9E-04	2.4E-03	2.4E-03	1.4E-02	1.4E-02	2.8E-01	2.8E-01	1.7E+00	1.7E+00
beta-HCH	5.61E+00	2.81E+03	RSL	0.3	0.13	2.10E-04	0.2000	5.0E-05	5.0E-05	2.9E-04	4.7E-04	4.7E-04	2.8E-03	2.8E-03	8.5E-03	8.5E-03	4.9E-02	4.9E-02	9.9E-01	9.9E-01	5.8E+00	5.8E+00
delta-HCH	5.61E+00	2.81E+03	RSL	0.3	0.13	2.10E-04	0.2000	5.0E-05	5.0E-05	2.9E-04	4.7E-04	4.7E-04	2.8E-03	2.8E-03	8.5E-03	8.5E-03	4.9E-02	4.9E-02	9.9E-01	9.9E-01	5.8E+00	5.8E+00
gamma-HCH (Lindane)	5.61E+00	2.81E+03	RSL	0.3	0.13	2.10E-04	0.2000	2.0E-04	2.0E-04	1.2E-03	7.7E-04	7.7E-04	4.5E-03	4.5E-03	1.4E-02	1.4E-02	8.0E-02	8.0E-02	7.7E-01	7.7E-01	4.5E+00	4.5E+00
Chlordane	6.76E+01	3.38E+04	RSL	0.3	0.13	2.00E-03	0.2002	2.0E-03	2.0E-03	1.4E-01	2.4E-03	2.4E-03	1.6E-01	1.6E-01	4.3E-02	4.3E-02	2.9E+00	2.9E+00	1.3E+00	1.3E+00	8.7E+01	8.7E+01
DDD	2.36E+02	1.18E+05	RSL	0.3	0.13	2.70E-04	0.2000	1.0E-04	1.0E-04	2.4E-02	3.5E-03	3.5E-03	8.4E-01	8.4E-01	6.3E-02	6.3E-02	1.5E+01	1.5E+01	7.5E+00	7.5E+00	1.8E+03	1.8E+03
DDE	2.36E+02	1.18E+05	RSL	0.3	0.13	1.70E-03	0.2001	1.0E-04	1.0E-04	2.4E-02	2.5E-03	2.5E-03	5.9E-01	5.9E-01	4.5E-02	4.5E-02	1.1E+01	1.1E+01	5.3E+00	5.3E+00	1.2E+03	1.2E+03
DDT	3.38E+02	1.69E+05	RSL	0.3	0.13	3.40E-04	0.2000	1.0E-04	1.0E-04	3.4E-02	2.5E-03	2.5E-03	8.5E-01	8.5E-01	4.5E-02	4.5E-02	1.5E+01	1.5E+01	1.3E+00	1.3E+00	4.3E+02	4.3E+02
Dieldrin	4.02E+01	2.01E+04	RSL	0.3	0.13	4.10E-04	0.2000	1.0E-04	1.0E-04	4.0E-03	5.3E-05	5.3E-05	2.2E-03	4.0E-03	9.5E-04	9.5E-04	3.8E-02	3.8E-02	1.1E-01	1.1E-01	4.5E+00	4.5E+00
Endrin	4.02E+01	2.01E+04	RSL	0.3	0.13	1.00E-05	0.2000	2.0E-03	2.0E-03	8.1E-02	4.7E-03	4.7E-03	1.9E-01	1.9E-01	1.6E-01	1.6E-01	6.6E+00	6.6E+00	7.7E-01	7.7E-01	3.1E+01	3.1E+01
Heptachlor	8.26E+01	4.13E+04	RSL	0.3	0.13	1.20E-02	0.2010	4.0E-04	4.0E-04	3.3E-02	1.9E-04	1.9E-04	1.6E-02	3.3E-02	3.4E-03	3.4E-03	2.8E-01	2.8E-01	4.0E-01	4.0E-01	3.3E+01	3.3E+01
Methoxychlor	5.38E+01	2.69E+04	RSL	0.3	0.13	8.30E-06	0.2000	4.0E-02	4.0E-02	2.2E+00	7.8E-02	7.8E-02	4.2E+00	4.2E+00	2.7E+00	2.7E+00	1.5E+02	1.5E+02	1.3E+01	1.3E+01	6.9E+02	6.9E+02
Toxaphene	1.54E+02	7.72E+04	RSL	0.3	0.13	2.50E-04	0.2000	5.0E-03	5.0E-03	7.7E-01	7.7E-04	7.7E-04	1.2E-01	7.7E-01	1.4E-02	1.4E-02	2.1E+00	2.1E+00	1.6E+00	1.6E+00	2.5E+02	2.5E+02

Koc, metal Kd, and H' values from EPA Regional Screening Values Table May 2012 unless otherwise noted.
Groundwater RRS from Table A-1

RSL Regional Screening Level Table
SCDM Superfund Chemical Data Matrix (US Environmental Protection Agency, 1997)
$Ø_w$ Water-filled soil porosity = 0.3 (L/L)
$Ø_a$ Air-filled soil porosity = 0.13 (L/L)
H' Dimensionless Henry Law Constant (HLC x 41) (unitless)
Þb Dry soil bulk density = 1.5 kg/L
RRS Risk Reduction Standard
C_w Target Leachate Concentration (mg/L)
C_s Screening Level in soil (mg/kg)
(a) $K_d = K_{oc} * f_{oc}$ where f_{oc} equal 0.002
(b) C_s based on Type 1 RRS higher than C_s based on Type 4 RRS
(c) Off-site based on Railyard Worker Scenario
(d) On-site based on Construction Worker Scenario
(e) SPLP study conducted for arsenic and lead; Highest total concentration with SPLP results less than the GW Standard times the DF of 1.
(f) Based on sodium; assumed sodium sulfate as form of sulfate.

Revised by : LWC 7/26/12
Checked by:LMS 7/27/12

Table 4.11: Summary of Regulated Substances Detected in Sediment Samples

Sample Date PARAMETER, UNITS	USEPA Regional Screening Levels, Residential Soil (mg/kg)	Location					
		SED-101 1/20/2000	**SED-102** 1/20/2000	**SED-103** 1/20/2000	**SED-104** 1/20/2000	**SED-105** 1/20/2000	**Main Point** 5/26/2004
METALS (mg/kg)							
Arsenic	0.39	**50.7**	**4.4**	**6.1**	**7.7**	**10.4**	**7.7**
Lead	400	66.1	30.9	52.9	91.5	34.7	36
ORGANOCHLORINE PESTICIDES (mg/kg)							
alpha-BHC	0.077	<0.002	<0.002	<0.002	0.054	0.011	0.016
beta-BHC	0.27	<0.002	<0.002	0.0024	0.027	0.011	0.065
Chlordane	1.6	<0.002	<0.002	<0.002	0.062	0.012	<0.054
DDD	2.0	0.0091	0.0025	0.0086	0.89	0.052	<0.010
DDE	1.4	0.0032	<0.002	0.0021	0.034	0.0095	<0.010
DDT	1.7	0.0069	<0.002	0.0041	0.34	0.055	<0.010
delta-BHC	0.27	<0.002	<0.002	<0.002	0.029	0.0076	0.022
Dieldrin	0.030	0.0032	<0.002	<0.002	**0.088**	0.012	0.011
gamma-BHC (lindane)	0.52	<0.002	<0.002	<0.002	0.03	0.0067	0.0085
Heptachlor	0.11	<0.002	<0.002	<0.002	0.0049	<0.002	<0.0054
Methoxychlor	310	<0.002	<0.002	<0.002	<0.0083	<0.002	<0.054
Toxaphene	0.44	<0.050	<0.050	<0.050	<0.170	<0.050	<0.54

Notes:

<0.002 = Constituent not detected above the detection limit shown.
mg/kg = milligrams/kilogram
Bold values exceed Regional Screening Levels.

Prepared by: L. Clem 7/25/12
Checked by: L. Smith 7/27/12

Table 4.12a: Summary of Regulated Substances Detected in Surface Water Samples

PARAMETER, UNITS	National AWQC Water +Organism	National AWQC Organism Only	SW-101	SW-102	SW-103	SW-104	SW-105	Main Point	Allied Outfall	SW-2007-1	SW-2007-2	SW-2007-3	SW-2007-4	SW-2007-5	SW-2007-6
		Sample Location													
		Sample Date	11/19/2002	11/19/2002	11/19/2002	11/19/2002	11/19/2002	5/26/2004	5/26/2004	8/10/2007	8/10/2007	8/10/2007	8/10/2007	8/10/2007	8/10/2007
		Distance Along Stream (ft)													
Total Organochlorine Pesticides (ug/L)										(a)	(a)	(a)	(a)	(a)	(a)
alpha-BHC	0.0026	0.0049	<0.025	<0.025	<0.025	0.054	0.29	0.75	<0.05	0.010 J	0.14	0.39	0.43	0.43	0.47
beta-BHC	0.0091	0.017	0.048P	<0.025	0.079P	0.14	0.28	2.4	0.078P	0.11	0.12	0.48	0.56	0.52	0.58
gamma-BHC (lindane)	0.98	1.8	<0.025	<0.025	<0.025	<0.025	0.12	0.52	<0.05	<0.0059	0.046 J	0.22	0.18	0.18	0.21
delta-BHC	not established	not established	<0.025	<0.025	<0.025	<0.025	0.15	0.46P	<0.05	<0.0069	0.11 P	0.21 P	0.63	0.36 P	0.39 P
Chlordane	0.0008	0.00081	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.049	<0.049	<0.048	<0.047	<0.047	<0.048
4,4'-DDD	0.00031	0.00031	<0.05	<0.05	<0.05	<0.05	<0.05	<0.4	<0.1	<0.0059	<0.0059	0.020 J	<0.0057	<0.0057	<0.0057
4,4'-DDE	0.00022	0.00022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.4	<0.1	<0.0098	<0.0098	<0.0096	<0.0094	<0.0094	<0.0095
4,4'-DDT	0.00022	0.00022	<0.05	<0.05	<0.05	<0.05	<0.05	<0.4	<0.1	<0.015	<0.015	<0.015	<0.014	<0.014	<0.015
Dieldrin	0.000052	0.000054	<0.025	<0.025	<0.025	<0.025	<0.025	<0.4	<0.1	<0.0078	<0.0078	0.020 J	0.0097 JP	<0.0075	<0.0076
Heptachlor	0.000079	0.000079	<0.025	<0.025	<0.025	<0.025	<0.025	<0.2	<0.05	<0.0045	<0.0045	<0.0044	<0.0043	<0.0043	<0.0044
Methoxychlor	100	not established	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<0.5	<0.023	<0.023	<0.023	<0.022	<0.022	<0.022
Toxaphene	0.00028	0.00028	<2	<2	<2	<2	<2	<20	<5	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Dissolved Organochlorine Pesticides (ug/L)															
alpha-BHC	0.0026	0.0049	<0.025	<0.025	<0.025	<0.025	0.3	NA	NA	0.011 J	0.11	0.33	0.53	0.48	0.60
beta-BHC	0.0091	0.017	0.053P	0.031P	0.073P	0.29	0.3	NA	NA	0.084	0.12	0.44	0.64	0.56	0.67
gamma-BHC (lindane)	0.98	1.8	<0.025	<0.025	<0.025	<0.025	0.098P	NA	NA	<0.0060	0.043 J	0.17	0.24	0.2	0.25
delta-BHC	not established	not established	<0.025	<0.025	<0.025	<0.025	0.23	NA	NA	<0.0070	0.10 P	0.18 P	0.43 P	0.37 P	0.43 P
Chlordane	0.0008	0.00081	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	<0.050	<0.049	<0.049	<0.048	<0.049	<0.048
4,4'-DDD	0.00031	0.00031	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	<0.0060	<0.0059	0.014 J	<0.0057	<0.0059	<0.0058
4,4'-DDE	0.00022	0.00022	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	<0.010	<0.0098	<0.0098	<0.0095	<0.0098	<0.0096
4,4'-DDT	0.00022	0.00022	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Dieldrin	0.000052	0.000054	<0.025	<0.025	<0.025	<0.025	<0.025	NA	NA	<0.0080	<0.0078	<0.0078	0.014 J	<0.0078	0.012 J
Heptachlor	0.000079	0.000079	<0.025	<0.025	<0.025	<0.025	<0.025	NA	NA	<0.0046	<0.0045	<0.0045	<0.0044	<0.0045	<0.0044
Methoxychlor	100	not established	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	<0.023	<0.023	<0.023	<0.022	<0.023	<0.023
Toxaphene	0.00028	0.00028	<2	<2	<2	<2	<2	NA	NA	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Total Metals (mg/L)															
Arsenic	0.000018	0.00014	0.039	0.0064	0.0069	<0.005	<0.005	<0.01	0.016	0.32	0.009	0.0039	<0.0025	<0.0025	0.0033
Copper	1.3	not established	NA	NA	NA	NA	NA	1.6	<0.02	NA	NA	NA	NA	NA	NA
Lead	not established	not established	<0.003	<0.003	<0.003	<0.003	<0.003	0.0094	<0.005	0.011	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Zinc	7.4	26	NA	NA	NA	NA	NA	13	0.68	NA	NA	NA	NA	NA	NA
Dissolved Metals (mg/L)															
Arsenic	0.000018	0.00014	0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	0.063	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Copper	1.3	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	not established	not established	<0.003	<0.003	<0.003	<0.003	<0.003	NA	NA	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Zinc	7.4	26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Trichlorobenzenes (ug/L)															
1,2,3-Trichlorobenzene	no criteria established		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	35	70	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate and Sulfate (mg/L)															
Nitrate as N	10 (nitrates)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	no criteria established		NA	NA	NA	NA	NA	510	85	NA	NA	NA	NA	NA	NA
Hardness as CaCo3 (mg/L)	no criteria established		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(a) = Total and dissolved pesticide results are reported to the method detection limits (MDLs) in an effort to report the lowest possible value obtained by the method.

Results reported between the MDL and the reporting limits (RLs) are considered quantitative estimates.

<0.025 = Constituent not detected above the detection limit shown.

ug/L = micrograms per liter

mg/L = milligrams per liter

J = Result reported between the MDL and RL. Result is a quantitative estimate.

P = Indentification of target analytes using gas chromatography (GC) is based on retention time.

Although 2 dissimilar GC columns confirmed the presence of the target anlyte in the sample, relative percent difference is >40%.

NA = constituent not analyzed

na = criteria is not applicable to these concentrations

Bolded = 2010 Sampling Result that exceeded National Recommended Water Quality Criteria

Revised by/Date: LWC 7/25/12
Checked by/Date: L Smith 7/27/12

Table 4.12a: Summary of Regulated Substances Detected in Surface Water Samples

PARAMETER, UNITS		Sample Location / Sample Date / Distance Along Stream (ft)	SW2010-1 9/23/2010 0	SW2010-2 9/23/2010 141	SW2010-3 9/23/2010 328	SW2010-4 9/23/2010 478	SW2010-5 9/23/2010 735	SW2010-6 9/23/2010 886	SW2010-7 9/23/2010 963	SW2010-8 9/23/2010 1040	SW2010-9 9/23/2010 1092	SW2010-10 9/23/2010 1152	SW2010-11 9/23/2010 1222	SW2010-12 9/23/2010 1367	SW2010-13 9/23/2010 1511	SW2010-14 9/23/2010 1667	SW2010-15 9/23/2010 1761	SW2010-16 9/23/2010 1907	SW2010-17 9/23/2010 2099	SW2010-18 9/23/2010 2275
Total Organochlorine Pesticides (ug/L)	**National AWQC Water +Organism**	**National AWQC Organism Only**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**	**(a)**
alpha-BHC	0.0026	0.0049	<0.0057	**0.13**	**0.057**	**0.039 J**	**0.13**	**0.094**	**0.09**	**0.18**	**0.16**	**0.13**	**0.19**	**0.25**	**0.5**	**0.62**	**0.62**	**0.37**	**0.31**	**0.45**
beta-BHC	0.0091	0.017	<0.0067	**0.16 P**	**0.15**	**0.14**	**0.23**	**0.15**	**0.16**	**0.19 P**	**0.14 P**	**0.18**	**0.45**	**0.46**	**0.63**	**0.73**	**0.75**	**0.6**	**0.48**	**0.64**
gamma-BHC (lindane)	0.98	1.8	<0.0059	0.058 P	0.06	0.028 JP	0.037 P	0.043 J	0.029 P	0.12	0.1	0.084	0.11	0.13	0.2	0.22	0.22	0.15	0.11	0.17
delta-BHC	not established	not established	<0.0048	0.22 P	0.13 P	0.11 P	0.2	0.14	0.091 P	0.19 P	0.2	0.11 P	0.13 P	0.15 P	0.32 P	0.48 P	0.44 P	0.33 P	0.21 P	0.3 P
Chlordane	0.0008	0.00081	<0.1	<0.1	<0.094	<0.094	<0.1	<0.094	<0.094	<0.1	<0.095	<0.094	<0.094	<0.094	<0.095	<0.095	<0.095	<0.094	<0.094	<0.095
4,4'-DDD	0.00031	0.00031	<0.0065	<0.0065	<0.0061	<0.0061	<0.0065	<0.0061	**0.014 J**	<0.0065	<0.0062	<0.0061	<0.0061	<0.0061	<0.0062	<0.0062	<0.0062	<0.0061	<0.0061	<0.0062
4,4'-DDE	0.00022	0.00022	<0.0077	<0.0077	<0.0073	<0.0073	<0.0077	<0.0073	<0.0073	<0.0077	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073
4,4'-DDT	0.00022	0.00022	<0.0097	<0.0097	<0.0092	<0.0092	<0.0097	<0.0092	<0.0092	<0.0097	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092
Dieldrin	0.000052	0.000054	<0.0091	<0.0091	<0.0086	<0.0086	<0.0091	<0.0086	<0.0086	**0.014 J**	<0.0087	**0.011 J**	**0.012 J**	**0.012 J**	**0.015 J**	**0.015 J**	**0.017 J**	**0.012 J**	<0.0086	<0.0087
Heptachlor	0.000079	0.000079	<0.007	<0.007	<0.0066	<0.0066	<0.007	<0.0066	<0.0066	<0.007	<0.0067	<0.0066	<0.0066	<0.0066	<0.0067	<0.0067	<0.0067	<0.0066	<0.0066	<0.0067
Methoxychlor	100	not established	<0.013	<0.013	<0.012	<0.012	<0.013	<0.012	<0.012	<0.013	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Toxaphene	0.00028	0.00028	<0.5	<0.5	<0.47	<0.47	<0.5	<0.47	<0.47	<0.5	<0.48	<0.47	<0.47	<0.47	<0.48	<0.48	<0.48	<0.47	<0.47	<0.48
Dissolved Organochlorine Pesticides (ug/L)																				
alpha-BHC	0.0026	0.0049	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	0.0091	0.017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (lindane)	0.98	1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane	0.0008	0.00081	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	0.00031	0.00031	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	0.00022	0.00022	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.00022	0.00022	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.000052	0.000054	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.000079	0.000079	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	100	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	0.00028	0.00028	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (mg/L)																				
Arsenic	0.000018	0.00014	**0.09**	**0.043**	**0.025**	**0.016**	**0.008**	**0.0059**	**0.0082**	**0.0053**	**0.0049**	**0.0041**	**0.0059**	**0.0067**	**0.0029**	**0.028**	**0.0025**	**0.0055**	**0.0029**	**0.0032**
Copper	1.3	not established	0.0043J	0.0065	0.0071	0.016	0.016	0.012	0.015	0.013	0.011	0.01	0.22	0.31	0.11	0.78	0.084	0.12	0.054	0.052
Lead	not established	not established	0.0024	0.0015	0.00096 J	0.0046	0.00067 J	0.00055 J	0.0032	0.0022	0.00064 J	<0.0005	0.012	0.0019	<0.0005	0.014	<0.0005	0.0047	<0.0005	<0.0005
Zinc	7.4	26	0.016 J	0.027	0.084	0.54	0.97	0.87	0.81	0.65	0.62	0.5	3	3.2	2.3	**15**	2.4	2.8	1.9	2
Dissolved Metals (mg/L)																				
Arsenic	0.000018	0.00014	**0.025**	**0.0074**	**0.0014 J**	<0.0013	**0.0015 J**	**0.0018 J**	**0.0019 J**	**0.002 J**	**0.0023 J**	**0.0023 J**	**0.0016 J**	**0.0016 J**	**0.0013 J**	<0.0013	<0.0013	<0.0013	**0.0013 J**	**0.0014 J**
Copper	1.3	not established	0.0012 J	0.0034 J	0.0031 J	0.0073	0.0074	0.0056	0.006	0.0055	0.0059	0.0054	0.097	0.092	0.053	0.048	0.038	0.03	0.024	0.02
Lead	not established	not established	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc	7.4	26	<0.0083	0.012 J	0.038	0.56	0.89	0.72	0.76	0.5	0.54	0.44	2.7	2.6	2.1	2.5	2.2	2.3	1.6	1.7
Total Trichlorobenzenes (ug/L)																				
1,2,3-Trichlorobenzene	no criteria established		<1	NA	NA	NA	<0.97	NA	NA	NA	NA	NA	<1	NA	<0.94	NA	<0.95	NA	NA	<0.94
1,2,4-Trichlorobenzene	35	70	<0.56	NA	NA	NA	<0.54	NA	NA	NA	NA	NA	<0.56	NA	<0.53	NA	<0.53	NA	NA	<0.53
Nitrate and Sulfate (mg/L)																				
Nitrate as N	10 (nitrates)		0.65	NA	NA	NA	0.74	NA	NA	NA	NA	NA	4.1	NA	3.3	NA	**530**	NA	NA	3.1
Sulfate	no criteria established		64	NA	NA	NA	110	NA	NA	NA	NA	NA	220	NA	180	NA	330	NA	NA	190
Hardness as CaCo3 (mg/L)	no criteria established		200	NA	NA	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(a) = Total and dissolved pesticide results are reported to the method detection limits (MDLs) in an effort to report the lowest possible value obtained by the method.

Results reported between the MDL and the reporting limits (RLs) are considered quantitative estimates.

<0.025 = Constituent not detected above the detection limit shown.

ug/L = micrograms per liter

mg/L = milligrams per liter

J = Result reported between the MDL and RL. Result is a quantitative estimate.

P = Indentification of target analytes using gas chromatography (GC) is based on retention time.

Although 2 dissimilar GC columns confirmed the presence of the target anlyte in the sample, relative percent difference is >40%.

NA = constituent not analyzed

na = criteria is not applicable to these concentrations

Bolded = 2010 Sampling Result that exceeded National Recommended Water Quality Criteria

Table 4.12b: Summary of Regulated Substances Detected in Surface Water Samples

PARAMETER, UNITS	GA Instream	National AWQC	SW-101	SW-102	SW-103	SW-104	SW-105	Main Point	Allied Outfall	SW-2007-1	SW-2007-2	SW-2007-3	SW-2007-4	SW-2007-5	SW-2007-6
Sample Location			SW-101	SW-102	SW-103	SW-104	SW-105	Main Point	Allied Outfall	SW-2007-1	SW-2007-2	SW-2007-3	SW-2007-4	SW-2007-5	SW-2007-6
Sample Date			11/19/2002	11/19/2002	11/19/2002	11/19/2002	11/19/2002	5/26/2004	5/26/2004	8/10/2007	8/10/2007	8/10/2007	8/10/2007	8/10/2007	8/10/2007
Distance Along Stream (ft)															
Total Organochlorine Pesticides (ug/L)										(a)	(a)	(a)	(a)	(a)	(a)
alpha-BHC	not established	not established	<0.025	<0.025	<0.025	0.054	0.29	0.75	<0.05	0.010 J	0.14	0.39	0.43	0.43	0.47
beta-BHC	not established	not established	0.048P	<0.025	0.079P	0.14	0.28	2.4	0.078P	0.11	0.12	0.48	0.56	0.52	0.58
gamma-BHC (lindane)	0.95 (acute)	0.95 (acute)	<0.025	<0.025	<0.025	<0.025	0.12	0.52	<0.05	<0.0059	0.046 J	0.22	0.18	0.18	0.21
delta-BHC	not established	not established	<0.025	<0.025	<0.025	<0.025	0.15	0.46P	<0.05	<0.0069	0.11 P	0.21 P	0.63	0.36 P	0.39 P
Chlordane	0.0043	0.0043	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.049	<0.049	<0.048	<0.047	<0.047	<0.048
4,4'-DDD	not established	not established	<0.05	<0.05	<0.05	<0.05	<0.05	<0.4	<0.1	<0.0059	<0.0059	0.020 J	<0.0057	<0.0057	<0.0057
4,4'-DDE	not established	not established	<0.05	<0.05	<0.05	<0.05	<0.05	<0.4	<0.1	<0.0098	<0.0098	<0.0096	<0.0094	<0.0094	<0.0095
4,4'-DDT	0.001	0.001	<0.05	<0.05	<0.05	<0.05	<0.05	<0.4	<0.1	<0.015	<0.015	<0.015	<0.014	<0.014	<0.015
Dieldrin	0.056	0.056	<0.025	<0.025	<0.025	<0.025	<0.025	<0.4	<0.1	<0.0078	<0.0078	0.020 J	0.0097 JP	<0.0075	<0.0076
Heptachlor	0.0038	0.0038	<0.025	<0.025	<0.025	<0.025	<0.025	<0.2	<0.05	<0.0045	<0.0045	<0.0044	<0.0043	<0.0043	<0.0044
Methoxychlor	0.03	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	<2	<0.5	<0.023	<0.023	<0.023	<0.022	<0.022	<0.022
Toxaphene	0.0002	0.0002	<2	<2	<2	<2	<2	<20	<5	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Dissolved Organochlorine Pesticides (ug/L)															
alpha-BHC	not established	not established	<0.025	<0.025	<0.025	<0.025	0.3	NA	NA	0.011 J	0.11	0.33	0.53	0.48	0.60
beta-BHC	not established	not established	0.053P	0.031P	0.073P	0.29	0.3	NA	NA	0.084	0.12	0.44	0.64	0.56	0.67
gamma-BHC (lindane)	0.95 (acute)	0.95 (acute)	<0.025	<0.025	<0.025	<0.025	0.098P	NA	NA	<0.0060	0.043 J	0.17	0.24	0.2	0.25
delta-BHC	not established	not established	<0.025	<0.025	<0.025	<0.025	0.23	NA	NA	<0.0070	0.10 P	0.18 P	0.43 P	0.37 P	0.43 P
Chlordane	0.0043	0.0043	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	<0.050	<0.049	<0.049	<0.048	<0.049	<0.048
4,4'-DDD	not established	not established	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	<0.0060	<0.0059	0.014 J	<0.0057	<0.0059	<0.0058
4,4'-DDE	not established	not established	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	<0.010	<0.0098	<0.0098	<0.0095	<0.0098	<0.0096
4,4'-DDT	0.001	0.001	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Dieldrin	0.056	0.056	<0.025	<0.025	<0.025	<0.025	<0.025	NA	NA	<0.0080	<0.0078	<0.0078	0.014 J	<0.0078	0.012 J
Heptachlor	0.0038	0.0038	<0.025	<0.025	<0.025	<0.025	<0.025	NA	NA	<0.0046	<0.0045	<0.0045	<0.0044	<0.0045	<0.0044
Methoxychlor	0.03	0.03	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	<0.023	<0.023	<0.023	<0.022	<0.023	<0.023
Toxaphene	0.0002	0.0002	<2	<2	<2	<2	<2	NA	NA	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Total Metals (mg/L)															
Arsenic	0.15	0.15	0.039	0.0064	0.0069	<0.005	<0.005	<0.01	0.016	0.32	0.009	0.0039	<0.0025	<0.0025	0.0033
Copper	0.005 *	0.009 #	NA	NA	NA	NA	NA	1.6	<0.02	NA	NA	NA	NA	NA	NA
Lead	0.0012 *	0.0025 #	<0.003	<0.003	<0.003	<0.003	<0.003	0.0094	<0.005	0.011	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Zinc	0.065 *	0.12 #	NA	NA	NA	NA	NA	13	0.68	NA	NA	NA	NA	NA	NA
Dissolved Metals (mg/L)															
Arsenic	0.15	0.15	0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	0.063	<0.0025	<0.0025	<0.0025	<0.0025	<0.0025
Copper	0.005 *	0.009 #	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	0.0012 *	0.0025 #	<0.003	<0.003	<0.003	<0.003	<0.003	NA	NA	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Zinc	0.065 *	0.12 #	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Trichlorobenzenes (ug/L)															
1,2,3-Trichlorobenzene	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate and Sulfate (mg/L)															
Nitrate as N	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	not established	not established	NA	NA	NA	NA	NA	510	85	NA	NA	NA	NA	NA	NA
Hardness as CaCo3 (mg/L)	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(a) = Total and dissolved pesticide results are reported to the method detection limits (MDLs) in an effort to report the lowest possible value obtained by the method.

Results reported between the MDL and the reporting limits (RLs) are considered quantitative estimates.

<0.025 = Constituent not detected above the detection limit shown.
ug/L = micrograms per liter
mg/L = milligrams per liter

J = Result reported between the MDL and RL. Result is a quantitative estimate.

P = Identification of target analytes using gas chromatography (GC) is based on retention time.

Although 2 dissimilar GC columns confirmed the presence of the target analyte in the sample, relative percent difference is >40%.

NA = constituent not analyzed
na = criteria is not applicable to these concentrations
* = criteria is based on a hardness of 50 mg/L
# = criteria is based on a hardness of 100 mg/L

Bolded = 2010 Sampling Result that exceeded Georgia Instream Concentrations or National Ambient Water Quality Criteria (AWQC) (USEPA 2009)

Revised by/Date: LWC 7/31/12
Checked by/Date: LMS 7/31/12

Table 4.12b: Summary of Regulated Substances Detected in Surface Water Samples

PARAMETER, UNITS	GA Instream	National AWQC	SW2010-1	SW2010-2	SW2010-3	SW2010-4	SW2010-5	SW2010-6	SW2010-7	SW2010-8	SW2010-9	SW2010-10	SW2010-11	SW2010-12	SW2010-13	SW2010-14	SW2010-15	SW2010-16	SW2010-17	SW2010-18
Sample Date			9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010	9/23/2010
Distance Along Stream (ft)			0	141	328	478	735	886	963	1040	1092	1152	1222	1367	1511	1667	1761	1907	2099	2275
Total Organochlorine Pesticides (ug/L)			(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)	(a)
alpha-BHC	not established	not established	<0.0057	0.13	0.057	0.039 J	0.13	0.094	0.09	0.18	0.16	0.13	0.19	0.25	0.5	0.62	0.62	0.37	0.31	0.45
beta-BHC	not established	not established	<0.0067	0.16 P	0.15	0.14	0.23	0.15	0.16	0.19 P	0.14 P	0.18	0.45	0.46	0.63	0.73	0.75	0.6	0.48	0.64
gamma-BHC (lindane)	0.95 (acute)	0.95 (acute)	<0.0059	0.058 P	0.06	0.028 JP	0.037 P	0.043 J	0.029 P	0.12	0.1	0.084	0.11	0.13	0.2	0.22	0.22	0.15	0.11	0.17
delta-BHC	not established	not established	<0.0048	0.22 P	0.13 P	0.11 P	0.2	0.14	0.091 P	0.19 P	0.2	0.11 P	0.13 P	0.15 P	0.32 P	0.48 P	0.44 P	0.33 P	0.21 P	0.3 P
Chlordane	0.0043	0.0043	<0.1	<0.1	<0.094	<0.094	<0.1	<0.094	<0.094	<0.1	<0.095	<0.094	<0.094	<0.094	<0.095	<0.095	<0.095	<0.094	<0.094	<0.095
4,4'-DDD	not established	not established	<0.0065	<0.0065	<0.0061	<0.0061	<0.0065	<0.0061	0.014 J	<0.0065	<0.0062	<0.0061	<0.0061	<0.0061	<0.0062	<0.0062	<0.0062	<0.0061	<0.0061	<0.0062
4,4'-DDE	not established	not established	<0.0077	<0.0077	<0.0073	<0.0073	<0.0077	<0.0073	<0.0073	<0.0077	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073	<0.0073
4,4'-DDT	0.001	0.001	<0.0097	<0.0097	<0.0092	<0.0092	<0.0097	<0.0092	<0.0092	<0.0097	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092	<0.0092
Dieldrin	0.056	0.056	<0.0091	<0.0091	<0.0086	<0.0086	<0.0091	<0.0086	<0.0086	0.014 J	<0.0087	0.011 J	0.012 J	0.012 J	0.015 J	0.015 J	0.017 J	0.012 J	<0.0086	<0.0087
Heptachlor	0.0038	0.0038	<0.007	<0.007	<0.0066	<0.0066	<0.007	<0.0066	<0.0066	<0.007	<0.0067	<0.0066	<0.0066	<0.0066	<0.0067	<0.0067	<0.0067	<0.0066	<0.0066	<0.0067
Methoxychlor	0.03	0.03	<0.013	<0.013	<0.012	<0.012	<0.013	<0.012	<0.012	<0.013	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Toxaphene	0.0002	0.0002	<0.5	<0.5	<0.47	<0.47	<0.5	<0.47	<0.47	<0.5	<0.48	<0.47	<0.47	<0.47	<0.48	<0.48	<0.48	<0.47	<0.47	<0.48
Dissolved Organochlorine Pesticides (ug/L)																				
alpha-BHC	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-BHC (lindane)	0.95 (acute)	0.95 (acute)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
delta-BHC	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlordane	0.0043	0.0043	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	not established	not established	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	0.001	0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	0.056	0.056	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heptachlor	0.0038	0.0038	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methoxychlor	0.03	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toxaphene	0.0002	0.0002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Metals (mg/L)																				
Arsenic	0.15	0.15	0.09	0.043	0.025	0.016	0.008	0.0059	0.0082	0.0053	0.0049	0.0041	0.0059	0.0067	0.0029	0.028	0.0025	0.0055	0.0029	0.0032
Copper	0.005 *	0.009 #	0.0043J	**0.0065**	**0.0071**	**0.016**	**0.016**	**0.012**	**0.015**	**0.013**	**0.011**	**0.01**	**0.22**	**0.31**	**0.11**	**0.78**	**0.084**	**0.12**	**0.054**	**0.052**
Lead	0.0012 *	0.0025 #	**0.0024**	**0.0015**	0.00096 J	**0.0046**	0.00067 J	0.00055 J	**0.0032**	**0.0022**	0.00064 J	<0.0005	**0.012**	**0.0019**	<0.0005	**0.014**	<0.0005	**0.0047**	<0.0005	<0.0005
Zinc	0.065 *	0.12 #	0.016 J	0.027	**0.084**	**0.54**	**0.97**	**0.87**	**0.81**	**0.65**	**0.62**	**0.5**	**3**	**3.2**	**2.3**	**15**	**2.4**	**2.8**	**1.9**	**2**
Dissolved Metals (mg/L)																				
Arsenic	0.15	0.15	0.025	0.0074	0.0014 J	<0.0013	0.0015 J	0.0018 J	0.0019 J	0.002 J	0.0023 J	0.0023 J	0.0016 J	0.0016 J	0.0013 J	<0.0013	<0.0013	<0.0013	0.0013 J	0.0014 J
Copper	0.005 *	0.009 #	0.0012 J	0.0034 J	0.0031 J	**0.0073**	**0.0074**	**0.0056**	**0.006**	**0.0055**	**0.0059**	**0.0054**	**0.097**	**0.092**	**0.053**	**0.048**	**0.038**	**0.03**	**0.024**	**0.02**
Lead	0.0012 *	0.0025 #	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Zinc	0.065 *	0.12 #	<0.0083	0.012 J	0.038	**0.56**	**0.89**	**0.72**	**0.76**	**0.5**	**0.54**	**0.44**	**2.7**	**2.6**	**2.1**	**2.5**	**2.2**	**2.3**	**1.6**	**1.7**
Total Trichlorobenzenes (ug/L)																				
1,2,3-Trichlorobenzene	not established	not established	<1	NA	NA	NA	<0.97	NA	NA	NA	NA	NA	<1	NA	<0.94	NA	<0.95	NA	NA	<0.94
1,2,4-Trichlorobenzene	not established	not established	<0.56	NA	NA	NA	<0.54	NA	NA	NA	NA	NA	<0.56	NA	<0.53	NA	<0.53	NA	NA	<0.53
Nitrate and Sulfate (mg/L)																				
Nitrate as N	not established	not established	0.65	NA	NA	NA	0.74	NA	NA	NA	NA	NA	4.1	NA	3.3	NA	530	NA	NA	3.1
Sulfate	not established	not established	64	NA	NA	NA	110	NA	NA	NA	NA	NA	220	NA	180	NA	330	NA	NA	190
Hardness as CaCo3 (mg/L)	not established	not established	200	NA	NA	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(a) = Total and dissolved pesticide results are reported to the method detection limits (MDLs) in an effort to report the lowest possible value obtained by the method.

Results reported between the MDL and the reporting limits (RLs) are considered quantitative estimates.

<0.025 = Constituent not detected above the detection limit shown.
ug/L = micrograms per liter
mg/L = milligrams per liter

J = Result reported between the MDL and RL. Result is a quantitative estimate.

P = Identification of target analytes using gas chromatography (GC) is based on retention time.

Although 2 dissimilar GC columns confirmed the presence of the target analyte in the sample, relative percent difference is >40%.

NA = constituent not analyzed
na = criteria is not applicable to these concentrations
* = criteria is based on a hardness of 50 mg/L
# = criteria is based on a hardness of 100 mg/L

Bolded = 2010 Sampling Result that exceeded Georgia Instream Concentrations or National Ambient Water Quality Criteria (AWQC) (USEPA 2009)

APPENDIX B

LABORATORY REPORTS AND FIELD SAMPLING FORMS FOR ESTECH PROPERTY MAY-JUNE 2012 INVESTIGATION

AES
Analytical Environmental Services, Inc.,
3785 Presidential Parkway
Atlanta, GA 30340

Stipulation of Approval for Commercial Laboratory

According to Georgia State Law (O.C.G.A. 12-2-9) Commercial Rules for Commercial Laboratory Accreditation, any person submitting data to EPD prepared by a commercial laboratory shall stipulate that the laboratory is approved (Chapter 391-3-26-.05). The following information is provided as requested.

Laboratory	Analytical Environmental Services, Inc. (AES) 3785 Presidential Parkway, NE Atlanta, GA 30340 (770) 457-8177
Accredited By:	State of Florida, Department of Health, Bureau of Laboratories; Accrediting NELAP Authority
Accreditation ID:	E87582
Scope:	Clean Water Act – Extractable Organics, General Chemistry, Metals, Microbiology, Pesticides-Herbicides, PCBs, Volatile Organics RCRA/CERCLA – Extractable Organics, General Chemistry, Metals, Pesticides-Herbicides, PCBs, Volatile Organics
Effective:	July 1, 2012
Expires:	June 30, 2013

I further certify that the sample(s) for which this data is being submitted has been handled pursuant to the appropriate chain of custody. Any question regarding this stipulation of approval may be directed to AES at 770 457-8177. Thank you for your business and please do not hesitate contacting us if we can be of further assistance.

Sincerely,

James Forrest
Director of Project Management

SOIL

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 23, 2012

Rhonda Quinn
AMEC E&I, Inc.
3200 Town Point Dr.
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1205F79

Analytical Environmental Services, Inc. received 34samples on May 17, 2012 12:00 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

Revision 7/23/2012

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205F79

Date: 5-14-12 Page 1 of 3

COMPANY: AMEC-E&I
ADDRESS: 3200 Town Point Dr. Ste. 100 Kennesaw, GA 30144
PHONE: 770-421-3400
FAX: 770-421-3486
SAMPLED BY: Jeff Moore
SIGNATURE: [signature]

ANALYSIS REQUESTED: Copper, Zinc

PRESERVATION (See codes): 4°

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Copper, Zinc	REMARKS	No # of Containers
1	TW-1-0-2	5-14-12	1035	X		SO	1		
2	TW-1-8-10	5-14-12	1038	X		SO	1		
3	TW-1-10-12	5-14-12	1042	X		SO	1		
4	TW-2-0-2	5-14-12	1155	X		SO	1		
5	TW-2-10-12	5-14-12	1159	X		SO	1		
6	TW-2-16-18	5-14-12	1201	X		SO	1		
7	TW-3-0-2	5-14-12	1255	X		SO	1		
8	TW-3-10-12	5-14-12	1259	X		SO	1		
9	TW-3-18-20	5-14-12	1:01	X		SO	1		
10	TW-4-0-2	5-14-12	1:52	X		SO	1		
11	TW-4-10-12	5-14-12	1:59	X		SO	1		
12	TW-4-20-22	5-14-12	2:03	X		SO	1		
13	TW-5-0-2	5-14-12	2:51	X		SO	1		
14	TW-5-10-12	5-14-12	2:56	X		SO	1		

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	5-16-12 5:45	1: [signature]	5/17/12 1200
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
(X) Standard 5 Business Days
( ) 2 Business Day Rush
( ) Next Business Day Rush
( ) Same Day Rush (auth req.)
( ) Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Page 2 of 45

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205F79

Date: 5-15-12 Page 2 of 3

COMPANY: AMEC E&I
ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144
PHONE: 770-421-3400
FAX: 770-421-3486
SAMPLED BY: Jeff Moore
SIGNATURE:

ANALYSIS REQUESTED: Copper, Zinc

PRESERVATION (See codes): SO

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	# Composite	Matrix (See codes)	No # of Containers	REMARKS
1	TW-5-16-18	5-14-12	3:00	X		SO	1	
2	TW-6-0-2	5-15-12	9:04	X		SO	1	
3	TW-6-10-12	5-15-12	9:22	X		SO	1	
4	TW-6-18-20	5-15-12	9:31	X		SO	1	
5	TW-7-0-2	5-15-12	10:38	X		SO	1	
6	TW-7-10-12	5-15-12	10:43	X		SO	1	
7	TW-8-0-2	5-15-12	11:20	X		SO	1	
8	TW-8-10-12	5-15-12	11:24	X		SO	1	
9	TW-9-0-2	5-15-12	3:16	X		SO	1	
10	TW-9-10-12	5-15-12	3:20	X		SO	1	
11	TW-9-15-17	5-15-12	3:25	X		SO	1	
12	TW-10-0-2	5-15-12	4:02	X		SO	1	
13	TW-10-10-12	5-15-12	4:07	X		SO	1	
14	TW-10-14-16	5-15-12	4:10	X		SO	1	

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	5-16-12 5:45	1:	5/17/12 10:00
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- ⊗ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

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ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205F79

Date: 5-16-12 Page 3 of 3

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeffrey Moore

ANALYSIS REQUESTED: Copper & Zinc

PRESERVATION (See codes): 4°

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Copper & Zinc	REMARKS	No # of Containers
1	TW-11-0-2	5-16-12	8:46	X		SO	1		
2	TW-11-14-16	5-16-12	8:50	X		SO	1		
3	TW-11-26-28	5-16-12	8:56	X		SO	1		
4	TW-12-0-2	5-16-12	9:28	X		SO	1		
5	TW-12-12-14	5-16-12	9:31						
6	TW-12-23-25	5-16-12	9:36						
7									
8									
9									
10									
11									
12									
13									
14									

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffrey Moore	5-16-12 5:45	1: [illegible]	5/17/12 11:00
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

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Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab ID: 1205F79

Case Narrative

There was no analysis indicated on Chain of Custody for samples "TW-12-12-14" and " TW-12-23-25". The samples were reported for Cu and Zn per email instructions from Rhonda Quinn on 5/21/12 at 9:05 am.

Metals by ICP/MS Analysis by Method 6020:

Due to sample matrix, sample 1205F79-001A through -034A required dilution during preparation and/or analysis resulting in elevated reporting limits.

The report was revised to remove the Method Detection Limits (MDL) and to change the reporting units to mg/Kg per email instructions from Rhonda Quinn on 7/19/12.

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-1-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 10:35:00 AM
Lab ID:	1205F79-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	119	0.64		mg/Kg-dry	161703	5	05/22/2012 20:20	JY
Zinc	119	3.19		mg/Kg-dry	161703	5	05/22/2012 20:20	JY
PERCENT MOISTURE D2216								
Percent Moisture	21.8	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-1-8-10
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 10:38:00 AM
Lab ID:	1205F79-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	30.1	0.58		mg/Kg-dry	161703	5	05/22/2012 20:26	JY
Zinc	96.2	2.88		mg/Kg-dry	161703	5	05/22/2012 20:26	JY
PERCENT MOISTURE D2216								
Percent Moisture	15.3	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-1-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 10:42:00 AM
Lab ID:	1205F79-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	15.2	0.61		mg/Kg-dry	161703	5	05/22/2012 19:31	JY
Zinc	98.0	3.06		mg/Kg-dry	161703	5	05/22/2012 19:31	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.5	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-2-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 11:55:00 AM
Lab ID:	1205F79-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	73.6	0.61		mg/Kg-dry	161703	5	05/22/2012 20:33	JY
Zinc	57.9	3.05		mg/Kg-dry	161703	5	05/22/2012 20:33	JY
PERCENT MOISTURE D2216								
Percent Moisture	18.7	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-2-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 11:59:00 AM
Lab ID:	1205F79-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	54.1	0.60		mg/Kg-dry	161703	5	05/22/2012 20:39	JY
Zinc	52.4	3.00		mg/Kg-dry	161703	5	05/22/2012 20:39	JY
PERCENT MOISTURE D2216								
Percent Moisture	17.2	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-2-16-18
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 12:01:00 PM
Lab ID:	1205F79-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	37.0	0.59		mg/Kg-dry	161703	5	05/22/2012 20:45	JY
Zinc	63.0	2.94		mg/Kg-dry	161703	5	05/22/2012 20:45	JY
PERCENT MOISTURE D2216								
Percent Moisture	15.8	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-3-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 12:55:00 PM
Lab ID:	1205F79-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	364	0.61		mg/Kg-dry	161703	5	05/22/2012 20:51	JY
Zinc	367	3.04		mg/Kg-dry	161703	5	05/22/2012 20:51	JY
PERCENT MOISTURE D2216								
Percent Moisture	21.1	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-3-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 12:59:00 PM
Lab ID:	1205F79-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	81.2	0.59		mg/Kg-dry	161703	5	05/22/2012 20:57	JY
Zinc	37.1	2.95		mg/Kg-dry	161703	5	05/22/2012 20:57	JY
PERCENT MOISTURE D2216								
Percent Moisture	20.6	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-3-18-20
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 1:01:00 PM
Lab ID:	1205F79-009	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	68.8	0.62		mg/Kg-dry	161703	5	05/22/2012 21:03	JY
Zinc	50.4	3.09		mg/Kg-dry	161703	5	05/22/2012 21:03	JY
PERCENT MOISTURE D2216								
Percent Moisture	21.9	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-4-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 1:52:00 PM
Lab ID:	1205F79-010	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	136	0.60		mg/Kg-dry	161703	5	05/22/2012 21:28	JY
Zinc	386	3.00		mg/Kg-dry	161703	5	05/22/2012 21:28	JY
PERCENT MOISTURE D2216								
Percent Moisture	18.5	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-4-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 1:59:00 PM
Lab ID:	1205F79-011	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	25.8	0.57		mg/Kg-dry	161703	5	05/22/2012 21:34	JY
Zinc	29.4	2.87		mg/Kg-dry	161703	5	05/22/2012 21:34	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.8	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-4-20-22
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 2:03:00 PM
Lab ID:	1205F79-012	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	46.8	0.61		mg/Kg-dry	161703	5	05/22/2012 21:40	JY
Zinc	116	3.03		mg/Kg-dry	161703	5	05/22/2012 21:40	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.1	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-5-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 2:51:00 PM
Lab ID:	1205F79-013	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	26.4	0.58		mg/Kg-dry	161703	5	05/22/2012 21:47	JY
Zinc	130	2.92		mg/Kg-dry	161703	5	05/22/2012 21:47	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.1	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-5-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 2:56:00 PM
Lab ID:	1205F79-014	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	284	0.65		mg/Kg-dry	161703	5	05/22/2012 21:53	JY
Zinc	76.8	3.26		mg/Kg-dry	161703	5	05/22/2012 21:53	JY
PERCENT MOISTURE D2216								
Percent Moisture	26.0	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-5-16-18
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 3:00:00 PM
Lab ID:	1205F79-015	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	33.2	0.57		mg/Kg-dry	161703	5	05/22/2012 21:59	JY
Zinc	62.6	2.87		mg/Kg-dry	161703	5	05/22/2012 21:59	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.2	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-6-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 9:04:00 AM
Lab ID:	1205F79-016	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	70.4	0.58		mg/Kg-dry	161703	5	05/22/2012 22:05	JY
Zinc	191	2.93		mg/Kg-dry	161703	5	05/22/2012 22:05	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.3	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-6-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 9:22:00 AM
Lab ID:	1205F79-017	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	41.9	0.58		mg/Kg-dry	161703	5	05/22/2012 22:11	JY
Zinc	210	2.91		mg/Kg-dry	161703	5	05/22/2012 22:11	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.4	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-6-18-20
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 9:31:00 AM
Lab ID:	1205F79-018	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	262	0.64		mg/Kg-dry	161703	5	05/22/2012 22:17	JY
Zinc	1810	3.19		mg/Kg-dry	161703	5	05/22/2012 22:17	JY
PERCENT MOISTURE D2216								
Percent Moisture	22.6	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-7-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 10:38:00 AM
Lab ID:	1205F79-019	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	14.0	0.58		mg/Kg-dry	161703	5	05/22/2012 22:24	JY
Zinc	69.6	2.91		mg/Kg-dry	161703	5	05/22/2012 22:24	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.8	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-7-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 10:43:00 AM
Lab ID:	1205F79-020	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	15.8	0.54		mg/Kg-dry	161703	5	05/23/2012 13:39	JY
Zinc	188	2.72		mg/Kg-dry	161703	5	05/22/2012 22:48	JY
PERCENT MOISTURE D2216								
Percent Moisture	13.8	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-8-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 11:20:00 AM
Lab ID:	1205F79-021	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	34.0	0.59		mg/Kg-dry	161704	5	05/23/2012 13:51	JY
Zinc	445	2.94		mg/Kg-dry	161704	5	05/22/2012 23:38	JY
PERCENT MOISTURE D2216								
Percent Moisture	15.2	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-8-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 11:24:00 AM
Lab ID:	1205F79-022	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	21.9	0.59		mg/Kg-dry	161704	5	05/23/2012 13:57	JY
Zinc	276	2.94		mg/Kg-dry	161704	5	05/23/2012 13:57	JY
PERCENT MOISTURE D2216								
Percent Moisture	18.1	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-9-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 3:16:00 PM
Lab ID:	1205F79-023	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	19.9	0.62		mg/Kg-dry	161704	5	05/23/2012 14:03	JY
Zinc	86.9	3.09		mg/Kg-dry	161704	5	05/23/2012 00:09	JY
PERCENT MOISTURE D2216								
Percent Moisture	20.4	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-9-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 3:20:00 PM
Lab ID:	1205F79-024	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	25.3	0.51		mg/Kg-dry	161704	5	05/23/2012 14:09	JY
Zinc	226	2.55		mg/Kg-dry	161704	5	05/23/2012 14:09	JY
PERCENT MOISTURE D2216								
Percent Moisture	6.67	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-9-15-17
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 3:25:00 PM
Lab ID:	1205F79-025	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	26.2	0.58		mg/Kg-dry	161704	5	05/23/2012 14:16	JY
Zinc	42.6	2.91		mg/Kg-dry	161704	5	05/23/2012 00:21	JY
PERCENT MOISTURE D2216								
Percent Moisture	17.4	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-10-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 4:02:00 PM
Lab ID:	1205F79-026	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	10.1	0.60		mg/Kg-dry	161704	5	05/23/2012 14:22	JY
Zinc	146	2.99		mg/Kg-dry	161704	5	05/23/2012 00:27	JY
PERCENT MOISTURE D2216								
Percent Moisture	17.3	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-10-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 4:07:00 PM
Lab ID:	1205F79-027	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	66.9	0.57		mg/Kg-dry	161704	5	05/23/2012 14:28	JY
Zinc	146	2.86		mg/Kg-dry	161704	5	05/23/2012 00:33	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.8	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-10-14-16
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 4:10:00 PM
Lab ID:	1205F79-028	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	113	0.67		mg/Kg-dry	161704	5	05/23/2012 14:34	JY
Zinc	122	3.33		mg/Kg-dry	161704	5	05/23/2012 00:39	JY
PERCENT MOISTURE D2216								
Percent Moisture	25.5	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-11-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/16/2012 8:46:00 AM
Lab ID:	1205F79-029	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	67.3	0.62		mg/Kg-dry	161704	5	05/23/2012 14:59	JY
Zinc	44.9	3.10		mg/Kg-dry	161704	5	05/23/2012 00:46	JY
PERCENT MOISTURE D2216								
Percent Moisture	20.7	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-11-14-16
Project Name:	BFEL-Atlanta	**Collection Date:**	5/16/2012 8:50:00 AM
Lab ID:	1205F79-030	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	71.2	0.57		mg/Kg-dry	161704	5	05/23/2012 15:05	JY
Zinc	57.1	2.87		mg/Kg-dry	161704	5	05/23/2012 00:52	JY
PERCENT MOISTURE D2216								
Percent Moisture	14.0	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-11-26-28
Project Name:	BFEL-Atlanta	**Collection Date:**	5/16/2012 8:56:00 AM
Lab ID:	1205F79-031	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	34.7	0.60		mg/Kg-dry	161704	5	05/23/2012 15:11	JY
Zinc	42.2	2.98		mg/Kg-dry	161704	5	05/23/2012 00:58	JY
PERCENT MOISTURE D2216								
Percent Moisture	17.6	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-12-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/16/2012 9:28:00 AM
Lab ID:	1205F79-032	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	4.12	0.60		mg/Kg-dry	161704	5	05/23/2012 15:17	JY
Zinc	35.4	3.00		mg/Kg-dry	161704	5	05/23/2012 01:04	JY
PERCENT MOISTURE D2216								
Percent Moisture	17.7	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-12-12-14
Project Name:	BFEL-Atlanta	**Collection Date:**	5/16/2012 9:31:00 AM
Lab ID:	1205F79-033	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	0.55	0.52		mg/Kg-dry	161704	5	05/23/2012 13:45	JY
Zinc	15.8	2.59		mg/Kg-dry	161704	5	05/22/2012 23:07	JY
PERCENT MOISTURE D2216								
Percent Moisture	8.10	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-12-23-25
Project Name:	BFEL-Atlanta	**Collection Date:**	5/16/2012 9:36:00 AM
Lab ID:	1205F79-034	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Copper	1.64	0.57		mg/Kg-dry	161704	5	05/23/2012 15:23	JY
Zinc	13.8	2.85		mg/Kg-dry	161704	5	05/23/2012 01:29	JY
PERCENT MOISTURE D2216								
Percent Moisture	12.6	0		wt%	R221813	1	05/22/2012 15:00	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Amec - E & I Work Order Number 1205F79

Checklist completed by PLT 5/18/12
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.3° Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205F79

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205F79-001A	TW-1-0-2	5/14/2012 10:35:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-001A	TW-1-0-2	5/14/2012 10:35:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-002A	TW-1-8-10	5/14/2012 10:38:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-002A	TW-1-8-10	5/14/2012 10:38:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-003A	TW-1-10-12	5/14/2012 10:42:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-003A	TW-1-10-12	5/14/2012 10:42:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-004A	TW-2-0-2	5/14/2012 11:55:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-004A	TW-2-0-2	5/14/2012 11:55:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-005A	TW-2-10-12	5/14/2012 11:59:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-005A	TW-2-10-12	5/14/2012 11:59:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-006A	TW-2-16-18	5/14/2012 12:01:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-006A	TW-2-16-18	5/14/2012 12:01:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-007A	TW-3-0-2	5/14/2012 12:55:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-007A	TW-3-0-2	5/14/2012 12:55:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-008A	TW-3-10-12	5/14/2012 12:59:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-008A	TW-3-10-12	5/14/2012 12:59:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-009A	TW-3-18-20	5/14/2012 1:01:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-009A	TW-3-18-20	5/14/2012 1:01:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-010A	TW-4-0-2	5/14/2012 1:52:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-010A	TW-4-0-2	5/14/2012 1:52:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-011A	TW-4-10-12	5/14/2012 1:59:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-011A	TW-4-10-12	5/14/2012 1:59:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-012A	TW-4-20-22	5/14/2012 2:03:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-012A	TW-4-20-22	5/14/2012 2:03:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-013A	TW-5-0-2	5/14/2012 2:51:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-013A	TW-5-0-2	5/14/2012 2:51:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-014A	TW-5-10-12	5/14/2012 2:56:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-014A	TW-5-10-12	5/14/2012 2:56:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-015A	TW-5-16-18	5/14/2012 3:00:00PM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205F79

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205F79-015A	TW-5-16-18	5/14/2012 3:00:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-016A	TW-6-0-2	5/15/2012 9:04:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-016A	TW-6-0-2	5/15/2012 9:04:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-017A	TW-6-10-12	5/15/2012 9:22:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-017A	TW-6-10-12	5/15/2012 9:22:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-018A	TW-6-18-20	5/15/2012 9:31:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-018A	TW-6-18-20	5/15/2012 9:31:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-019A	TW-7-0-2	5/15/2012 10:38:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-019A	TW-7-0-2	5/15/2012 10:38:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-020A	TW-7-10-12	5/15/2012 10:43:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-020A	TW-7-10-12	5/15/2012 10:43:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-020A	TW-7-10-12	5/15/2012 10:43:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-021A	TW-8-0-2	5/15/2012 11:20:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-021A	TW-8-0-2	5/15/2012 11:20:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-021A	TW-8-0-2	5/15/2012 11:20:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-022A	TW-8-10-12	5/15/2012 11:24:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-022A	TW-8-10-12	5/15/2012 11:24:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-023A	TW-9-0-2	5/15/2012 3:16:00PM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-023A	TW-9-0-2	5/15/2012 3:16:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-024A	TW-9-10-12	5/15/2012 3:20:00PM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-024A	TW-9-10-12	5/15/2012 3:20:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-025A	TW-9-15-17	5/15/2012 3:25:00PM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-025A	TW-9-15-17	5/15/2012 3:25:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-026A	TW-10-0-2	5/15/2012 4:02:00PM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-026A	TW-10-0-2	5/15/2012 4:02:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-027A	TW-10-10-12	5/15/2012 4:07:00PM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-027A	TW-10-10-12	5/15/2012 4:07:00PM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-028A	TW-10-14-16	5/15/2012 4:10:00PM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-028A	TW-10-14-16	5/15/2012 4:10:00PM	Soil	PERCENT MOISTURE			05/22/2012

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205F79

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205F79-029A	TW-11-0-2	5/16/2012 8:46:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-029A	TW-11-0-2	5/16/2012 8:46:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-030A	TW-11-14-16	5/16/2012 8:50:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-030A	TW-11-14-16	5/16/2012 8:50:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-031A	TW-11-26-28	5/16/2012 8:56:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-031A	TW-11-26-28	5/16/2012 8:56:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-032A	TW-12-0-2	5/16/2012 9:28:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-032A	TW-12-0-2	5/16/2012 9:28:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-033A	TW-12-12-14	5/16/2012 9:31:00AM	Soil	Metals by ICP/MS		05/21/2012	05/22/2012
1205F79-033A	TW-12-12-14	5/16/2012 9:31:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-033A	TW-12-12-14	5/16/2012 9:31:00AM	Soil	PERCENT MOISTURE			05/22/2012
1205F79-034A	TW-12-23-25	5/16/2012 9:36:00AM	Soil	Metals by ICP/MS		05/21/2012	05/23/2012
1205F79-034A	TW-12-23-25	5/16/2012 9:36:00AM	Soil	PERCENT MOISTURE			05/22/2012

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205F79

ANALYTICAL QC SUMMARY REPORT

BatchID: **161703**

Sample ID: **MB-161703** Client ID: Units: **mg/Kg** Prep Date: **05/21/2012** Run No: **221785**
SampleType: **MBLK** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161703** Analysis Date: **05/22/2012** Seq No: **4638236**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	BRL	0.10	0	0	0	0	0	0	0	0	
Zinc	BRL	0.50	0	0	0	0	0	0	0	0	

Sample ID: **LCS-161703** Client ID: Units: **mg/Kg** Prep Date: **05/21/2012** Run No: **221785**
SampleType: **LCS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161703** Analysis Date: **05/22/2012** Seq No: **4638234**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	5.180	0.10	5	0	104	80	120	0	0	0	
Zinc	4.990	0.50	5	0	99.8	80	120	0	0	0	

Sample ID: **1205F79-003AMS** Client ID: **TW-1-10-12** Units: **mg/Kg-dry** Prep Date: **05/21/2012** Run No: **221785**
SampleType: **MS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161703** Analysis Date: **05/22/2012** Seq No: **4638239**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	23.05	0.61	6.108	15.23	128	75	125	0	0	0	S
Zinc	134.9	3.05	6.108	97.96	604	75	125	0	0	0	S

Sample ID: **1205F79-003AMSD** Client ID: **TW-1-10-12** Units: **mg/Kg-dry** Prep Date: **05/21/2012** Run No: **221785**
SampleType: **MSD** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161703** Analysis Date: **05/22/2012** Seq No: **4638240**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	23.47	0.61	6.138	15.23	134	75	125	23.05	1.8	20	S
Zinc	137.4	3.07	6.138	97.96	643	75	125	134.9	1.86	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205F79

ANALYTICAL QC SUMMARY REPORT

BatchID: **161704**

Sample ID: **MB-161704** Client ID: Units: **mg/Kg** Prep Date: **05/21/2012** Run No: **221786**
SampleType: **MBLK** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161704** Analysis Date: **05/22/2012** Seq No: **4638505**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	BRL	0.10	0	0	0	0	0	0	0	0	
Zinc	BRL	0.50	0	0	0	0	0	0	0	0	

Sample ID: **LCS-161704** Client ID: Units: **mg/Kg** Prep Date: **05/21/2012** Run No: **221786**
SampleType: **LCS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161704** Analysis Date: **05/22/2012** Seq No: **4638498**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	5.350	0.10	5	0	107	80	120	0	0	0	
Zinc	5.110	0.50	5	0	102	80	120	0	0	0	

Sample ID: **1205F79-033AMS** Client ID: **TW-12-12-14** Units: **mg/Kg-dry** Prep Date: **05/21/2012** Run No: **221786**
SampleType: **MS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161704** Analysis Date: **05/22/2012** Seq No: **4638508**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	4.919	0.52	5.194	0.5311	84.5	75	125	0	0	0	
Zinc	21.94	2.60	5.194	15.81	118	75	125	0	0	0	

Sample ID: **1205F79-033AMSD** Client ID: **TW-12-12-14** Units: **mg/Kg-dry** Prep Date: **05/21/2012** Run No: **221786**
SampleType: **MSD** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161704** Analysis Date: **05/22/2012** Seq No: **4638510**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	5.528	0.52	5.203	0.5311	96	75	125	4.919	11.7	20	
Zinc	21.67	2.60	5.203	15.81	113	75	125	21.94	1.26	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 23, 2012

Rhonda Quinn
AMEC E&I, Inc.
3200 Town Point Dr.
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1205I87

Analytical Environmental Services, Inc. received 18samples on May 23, 2012 10:25 am for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

Revision 7/23/2012

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205D87

Composites

Date: 5-21/22-12 Page 1 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeffrey L Moore

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Pesticides, Lead, Arsenic, Copper, Zinc	Pesticides 2,4-Dinitrotoluene	Arsenic, Lead Copper, Zinc	Pesticides	Arsenic, Pesticides Copper, Zinc	No # of Containers	REMARKS
	PRESERVATION (See codes)						4°	4°					
1	SB-E-0-2	5-21-12	10:25		✓	SO		1				1	
2	SB-E-2-4	5-21-12	10:25		✓	SO		1				1	
3	SB-F-0-2	5-21-12	1:30		✓	SO	1					1	
4	SB-F-2-4	5-21-12	1:30		✓	SO	1					1	
5	SB-G-0-2	5-21-12	3:30		✓	SO			1			1	
6	SB-G-2-4	5-21-12	3:30		✓	SO			1			1	
7	SB-G-4-6	5-21-12	3:30		✓	SO			1			1	
8	SB-SS2-0-2	5-22-12	9:37		✓	SO				1		1	
9	SB-SS2-2-4	5-22-12	9:37		✓	SO				1		1	
10	SB-SS3-0-2	5-22-12	10:19		✓	SO				1		1	
11	SB-SS3-2-4	5-22-12	10:19		✓	SO				1		1	
12	SB-A-0-2	5-22-12	4:32		✓	SO					1	1	
13	SB-A-3-5	5-22-12	4:33		✓	SO					1	1	
14	SB-A-6-8	5-22-12	4:34		✓	SO					1	1	

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffrey L Moore	5-22-12 6:30	1: [signature]	5/23/12 10:25
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers: 18 total

Turnaround Time Requested For Analysis
- (●) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? (Y)/ N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Page 2 of 32

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205I87

Composites

Date: 5-22-12 Page 2 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE:

ANALYSIS REQUESTED: Arsenic, Pesticides, Copper, Zinc

PRESERVATION (See codes): 4°

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	No # of Containers	REMARKS
1	SB-A-8-10	5-22-12	4:35		✓	SO	1	
2	SB-A-10-12	5-22-12	4:36		✓	SO	1	
3	SB-A-12-14	5-22-12	4:37		✓	SO	1	
4	SB-A-14-16	5-22-12	4:38		✓	SO	1	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	5-22-12 6:30	1:	5/23/12 10:25
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers 18 total for Analysis

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? (Y) N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

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Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab ID: 1205I87

Case Narrative

Metals by ICP/MS Analysis by Method 6020:

Due to sample matrix, samples 1205I87-003A through -018A required dilution during preparation and/or analysis resulting in elevated reporting limits.

Pesticide Analysis by Method 8081B:

Due to sample matrix, samples 1205I87-0012A, -003A, -004A, -008A, -010A, -012A, -013A and -018A required dilution during analysis resulting in elevated reporting limits.

The report was revised to remove the Method Detection Limits (MDL), to remove Aldrin from sample 1205I87-001A, and to change the reporting units to mg/Kg per email instructions from Rhonda Quinn on 7/19/12.

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-E-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 10:25:00 AM
Lab ID:	1205I87-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
2,4-Dinitrotoluene	BRL	0.38		mg/Kg-dry	161919	1	05/29/2012 17:44	YH
Surr: 2,4,6-Tribromophenol	94.5	41.1-130		%REC	161919	1	05/29/2012 17:44	YH
Surr: 2-Fluorobiphenyl	86.7	45-120		%REC	161919	1	05/29/2012 17:44	YH
Surr: 2-Fluorophenol	75.5	35-120		%REC	161919	1	05/29/2012 17:44	YH
Surr: 4-Terphenyl-d14	100	50.1-123		%REC	161919	1	05/29/2012 17:44	YH
Surr: Nitrobenzene-d5	80.9	37.5-120		%REC	161919	1	05/29/2012 17:44	YH
Surr: Phenol-d5	79.5	39-120		%REC	161919	1	05/29/2012 17:44	YH
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	2.4	0.076		mg/Kg-dry	161941	20	06/02/2012 17:17	KD
4,4´-DDE	1.5	0.076		mg/Kg-dry	161941	20	06/02/2012 17:17	KD
4,4´-DDT	46	3.8		mg/Kg-dry	161941	1000	06/06/2012 14:25	KD
alpha-BHC	0.32	0.038		mg/Kg-dry	161941	20	06/02/2012 17:17	KD
alpha-Chlordane	4.1	0.19		mg/Kg-dry	161941	100	06/05/2012 20:44	KD
beta-BHC	8.8	1.9		mg/Kg-dry	161941	1000	06/06/2012 14:25	KD
delta-BHC	0.16	0.038		mg/Kg-dry	161941	20	06/02/2012 17:17	KD
Dieldrin	3.6	0.38		mg/Kg-dry	161941	100	06/05/2012 20:44	KD
gamma-BHC	0.13	0.038		mg/Kg-dry	161941	20	06/02/2012 17:17	KD
gamma-Chlordane	4.6	0.19		mg/Kg-dry	161941	100	06/05/2012 20:44	KD
Heptachlor	7.5	0.38		mg/Kg-dry	161941	200	06/05/2012 20:55	KD
Methoxychlor	BRL	0.38		mg/Kg-dry	161941	20	06/02/2012 17:17	KD
Toxaphene	17	3.8		mg/Kg-dry	161941	20	06/02/2012 17:17	KD
Surr: Decachlorobiphenyl	107	26.2-127		%REC	161941	20	06/02/2012 17:17	KD
Surr: Tetrachloro-m-xylene	75.9	26.9-121		%REC	161941	20	06/02/2012 17:17	KD
PERCENT MOISTURE D2216								
Percent Moisture	12.6	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-E-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 10:25:00 AM
Lab ID:	1205I87-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
TCL-SEMIVOLATILE ORGANICS SW8270D				**(SW3550C)**				
2,4-Dinitrotoluene	0.53	0.40		mg/Kg-dry	161919	1	05/29/2012 18:13	YH
Surr: 2,4,6-Tribromophenol	106	41.1-130		%REC	161919	1	05/29/2012 18:13	YH
Surr: 2-Fluorobiphenyl	89.2	45-120		%REC	161919	1	05/29/2012 18:13	YH
Surr: 2-Fluorophenol	82.8	35-120		%REC	161919	1	05/29/2012 18:13	YH
Surr: 4-Terphenyl-d14	104	50.1-123		%REC	161919	1	05/29/2012 18:13	YH
Surr: Nitrobenzene-d5	85.6	37.5-120		%REC	161919	1	05/29/2012 18:13	YH
Surr: Phenol-d5	85.8	39-120		%REC	161919	1	05/29/2012 18:13	YH
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	14	2.0		mg/Kg-dry	161941	500	06/06/2012 14:51	KD
4,4´-DDE	3.3	0.41		mg/Kg-dry	161941	100	06/05/2012 19:38	KD
4,4´-DDT	24	2.0		mg/Kg-dry	161941	500	06/06/2012 14:51	KD
alpha-BHC	0.91	0.041		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
alpha-Chlordane	0.28	0.041		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
beta-BHC	2.2	0.20		mg/Kg-dry	161941	100	06/05/2012 19:38	KD
delta-BHC	0.35	0.041		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
Dieldrin	0.36	0.081		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
gamma-BHC	0.28	0.041		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
gamma-Chlordane	0.69	0.041		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
Heptachlor	0.47	0.041		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
Methoxychlor	BRL	0.41		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
Toxaphene	17	4.1		mg/Kg-dry	161941	20	06/02/2012 17:28	KD
Surr: Decachlorobiphenyl	97.6	26.2-127		%REC	161941	20	06/02/2012 17:28	KD
Surr: Tetrachloro-m-xylene	65	26.9-121		%REC	161941	20	06/02/2012 17:28	KD
PERCENT MOISTURE D2216								
Percent Moisture	18.3	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-F-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 1:30:00 PM
Lab ID:	1205I87-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	133	85.3		mg/Kg-dry	161958	10	05/31/2012 05:35	JY
Copper	203	1.14		mg/Kg-dry	161958	10	05/31/2012 05:35	JY
Lead	1560	0.57		mg/Kg-dry	161958	10	05/31/2012 05:35	JY
Zinc	248	5.69		mg/Kg-dry	161958	10	05/31/2012 05:35	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	0.42	0.082		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
4,4´-DDE	0.22	0.082		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
4,4´-DDT	4.2	0.20		mg/Kg-dry	161941	50	06/05/2012 19:49	KD
alpha-BHC	BRL	0.041		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
alpha-Chlordane	BRL	0.041		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
beta-BHC	0.32	0.041		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
delta-BHC	BRL	0.041		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
Dieldrin	0.14	0.082		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
gamma-BHC	BRL	0.041		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
gamma-Chlordane	0.094	0.041		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
Heptachlor	0.041	0.041		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
Methoxychlor	BRL	0.41		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
Toxaphene	BRL	4.1		mg/Kg-dry	161941	20	06/02/2012 17:39	KD
Surr: Decachlorobiphenyl	102	26.2-127		%REC	161941	20	06/02/2012 17:39	KD
Surr: Tetrachloro-m-xylene	50.4	26.9-121		%REC	161941	20	06/02/2012 17:39	KD
PERCENT MOISTURE D2216								
Percent Moisture	18.5	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-F-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 1:30:00 PM
Lab ID:	1205I87-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	161	90.2		mg/Kg-dry	161958	10	05/31/2012 05:41	JY
Copper	322	1.20		mg/Kg-dry	161958	10	05/31/2012 05:41	JY
Lead	1790	0.60		mg/Kg-dry	161958	10	05/31/2012 05:41	JY
Zinc	402	6.01		mg/Kg-dry	161958	10	05/31/2012 05:41	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	7.6	0.42		mg/Kg-dry	161941	100	06/05/2012 20:00	KD
4,4´-DDE	1.1	0.084		mg/Kg-dry	161941	20	06/02/2012 17:50	KD
4,4´-DDT	82	4.2		mg/Kg-dry	161941	1000	06/06/2012 14:53	KD
alpha-BHC	0.28	0.042		mg/Kg-dry	161941	20	06/02/2012 17:50	KD
alpha-Chlordane	0.33	0.042		mg/Kg-dry	161941	20	06/02/2012 17:50	KD
beta-BHC	11	0.42		mg/Kg-dry	161941	200	06/05/2012 20:11	KD
delta-BHC	0.41	0.042		mg/Kg-dry	161941	20	06/02/2012 17:50	KD
Dieldrin	6.4	0.42		mg/Kg-dry	161941	100	06/05/2012 20:00	KD
gamma-BHC	0.28	0.042		mg/Kg-dry	161941	20	06/02/2012 17:50	KD
gamma-Chlordane	1.6	0.21		mg/Kg-dry	161941	100	06/05/2012 20:00	KD
Heptachlor	3.6	0.21		mg/Kg-dry	161941	100	06/05/2012 20:00	KD
Methoxychlor	BRL	0.42		mg/Kg-dry	161941	20	06/02/2012 17:50	KD
Toxaphene	24	4.2		mg/Kg-dry	161941	20	06/02/2012 17:50	KD
Surr: Decachlorobiphenyl	210	26.2-127	S	%REC	161941	20	06/02/2012 17:50	KD
Surr: Tetrachloro-m-xylene	75	26.9-121		%REC	161941	20	06/02/2012 17:50	KD
PERCENT MOISTURE D2216								
Percent Moisture	20.3	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-G-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 3:30:00 PM
Lab ID:	1205I87-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	210	92.1		mg/Kg-dry	161958	10	05/31/2012 05:47	JY
Copper	531	1.23		mg/Kg-dry	161958	10	05/31/2012 05:47	JY
Lead	4350	0.61		mg/Kg-dry	161958	10	05/31/2012 05:47	JY
Zinc	419	6.14		mg/Kg-dry	161958	10	05/31/2012 05:47	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.0	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-G-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 3:30:00 PM
Lab ID:	1205I87-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	195	89.7		mg/Kg-dry	161958	10	05/31/2012 05:54	JY
Copper	522	1.20		mg/Kg-dry	161958	10	05/31/2012 05:54	JY
Lead	4150	0.60		mg/Kg-dry	161958	10	05/31/2012 05:54	JY
Zinc	552	5.98		mg/Kg-dry	161958	10	05/31/2012 05:54	JY
PERCENT MOISTURE D2216								
Percent Moisture	17.2	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-G-4-6
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 3:30:00 PM
Lab ID:	1205I87-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	108	87.9		mg/Kg-dry	161958	10	05/31/2012 06:00	JY
Copper	51.9	1.17		mg/Kg-dry	161958	10	05/31/2012 06:00	JY
Lead	33.2	0.59		mg/Kg-dry	161958	10	05/31/2012 06:00	JY
Zinc	52.4	5.86		mg/Kg-dry	161958	10	05/31/2012 06:00	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.3	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-SS2-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 9:37:00 AM
Lab ID:	1205I87-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	0.14	0.039		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
4,4´-DDE	0.38	0.039		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
4,4´-DDT	1.5	0.078		mg/Kg-dry	161941	20	06/02/2012 18:12	KD
alpha-BHC	0.093	0.019		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
alpha-Chlordane	BRL	0.019		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
beta-BHC	1.4	0.097		mg/Kg-dry	161941	50	06/02/2012 18:23	KD
delta-BHC	0.026	0.019		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
Dieldrin	0.16	0.039		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
gamma-BHC	0.054	0.019		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
gamma-Chlordane	0.029	0.019		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
Heptachlor	BRL	0.019		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
Methoxychlor	BRL	0.19		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
Toxaphene	2.3	1.9		mg/Kg-dry	161941	10	06/02/2012 18:01	KD
Surr: Decachlorobiphenyl	217	26.2-127	S	%REC	161941	10	06/02/2012 18:01	KD
Surr: Tetrachloro-m-xylene	61.1	26.9-121		%REC	161941	10	06/02/2012 18:01	KD
PERCENT MOISTURE D2216								
Percent Moisture	14.2	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-SS2-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 9:37:00 AM
Lab ID:	1205I87-009	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	BRL	0.0041		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
4,4´-DDE	0.010	0.0041		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
4,4´-DDT	BRL	0.0041		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
alpha-BHC	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
alpha-Chlordane	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
beta-BHC	0.024	0.0021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
delta-BHC	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
Dieldrin	0.013	0.0041		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
gamma-BHC	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
gamma-Chlordane	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
Heptachlor	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
Methoxychlor	BRL	0.021		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
Toxaphene	BRL	0.21		mg/Kg-dry	161941	1	06/02/2012 18:34	KD
Surr: Decachlorobiphenyl	55.6	26.2-127		%REC	161941	1	06/02/2012 18:34	KD
Surr: Tetrachloro-m-xylene	79.2	26.9-121		%REC	161941	1	06/02/2012 18:34	KD
PERCENT MOISTURE D2216								
Percent Moisture	19.8	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-SS3-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 10:19:00 AM
Lab ID:	1205I87-010	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	BRL	0.073		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
4,4´-DDE	BRL	0.073		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
4,4´-DDT	0.19	0.073		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
alpha-BHC	BRL	0.036		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
alpha-Chlordane	BRL	0.036		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
beta-BHC	BRL	0.036		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
delta-BHC	BRL	0.036		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
Dieldrin	BRL	0.073		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
gamma-BHC	BRL	0.036		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
gamma-Chlordane	BRL	0.036		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
Heptachlor	BRL	0.036		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
Methoxychlor	BRL	0.36		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
Toxaphene	BRL	3.6		mg/Kg-dry	161941	20	06/02/2012 18:45	KD
Surr: Decachlorobiphenyl	31.1	26.2-127		%REC	161941	20	06/02/2012 18:45	KD
Surr: Tetrachloro-m-xylene	31.2	26.9-121		%REC	161941	20	06/02/2012 18:45	KD
PERCENT MOISTURE D2216								
Percent Moisture	8.31	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-SS3-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 10:19:00 AM
Lab ID:	1205I87-011	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	BRL	0.0036		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
4,4´-DDE	BRL	0.0036		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
4,4´-DDT	0.0079	0.0036		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
alpha-BHC	BRL	0.0018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
alpha-Chlordane	BRL	0.0018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
beta-BHC	BRL	0.0018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
delta-BHC	BRL	0.0018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
Dieldrin	0.0041	0.0036		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
gamma-BHC	BRL	0.0018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
gamma-Chlordane	0.0021	0.0018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
Heptachlor	BRL	0.0018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
Methoxychlor	BRL	0.018		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
Toxaphene	BRL	0.18		mg/Kg-dry	161941	1	06/02/2012 18:56	KD
Surr: Decachlorobiphenyl	54.3	26.2-127		%REC	161941	1	06/02/2012 18:56	KD
Surr: Tetrachloro-m-xylene	69	26.9-121		%REC	161941	1	06/02/2012 18:56	KD
PERCENT MOISTURE D2216								
Percent Moisture	8.58	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:32:00 PM
Lab ID:	1205I87-012	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	95.8	81.5		mg/Kg-dry	161958	10	05/31/2012 06:06	JY
Copper	162	1.09		mg/Kg-dry	161958	10	05/31/2012 06:06	JY
Zinc	222	5.43		mg/Kg-dry	161958	10	05/31/2012 06:06	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	0.44	0.077		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
4,4´-DDE	0.46	0.077		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
4,4´-DDT	4.0	0.19		mg/Kg-dry	161941	50	06/05/2012 20:22	KD
alpha-BHC	0.043	0.039		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
alpha-Chlordane	0.041	0.039		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
beta-BHC	0.53	0.039		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
delta-BHC	BRL	0.039		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
Dieldrin	0.20	0.077		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
gamma-BHC	BRL	0.039		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
gamma-Chlordane	0.15	0.039		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
Heptachlor	BRL	0.039		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
Methoxychlor	BRL	0.39		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
Toxaphene	BRL	3.9		mg/Kg-dry	161941	20	06/02/2012 19:29	KD
Surr: Decachlorobiphenyl	59.8	26.2-127		%REC	161941	20	06/02/2012 19:29	KD
Surr: Tetrachloro-m-xylene	91.2	26.9-121		%REC	161941	20	06/02/2012 19:29	KD
PERCENT MOISTURE D2216								
Percent Moisture	13.9	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-3-5
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:33:00 PM
Lab ID:	1205I87-013	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	157	88.7		mg/Kg-dry	161958	10	05/31/2012 06:12	JY
Copper	159	1.18		mg/Kg-dry	161958	10	05/31/2012 06:12	JY
Zinc	278	5.92		mg/Kg-dry	161958	10	05/31/2012 06:12	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	0.14	0.079		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
4,4´-DDE	BRL	0.079		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
4,4´-DDT	1.9	0.079		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
alpha-BHC	0.069	0.040		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
alpha-Chlordane	BRL	0.040		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
beta-BHC	0.62	0.040		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
delta-BHC	BRL	0.040		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
Dieldrin	BRL	0.079		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
gamma-BHC	BRL	0.040		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
gamma-Chlordane	BRL	0.040		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
Heptachlor	BRL	0.040		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
Methoxychlor	BRL	0.40		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
Toxaphene	BRL	4.0		mg/Kg-dry	161941	20	06/02/2012 19:40	KD
Surr: Decachlorobiphenyl	133	26.2-127	S	%REC	161941	20	06/02/2012 19:40	KD
Surr: Tetrachloro-m-xylene	60.8	26.9-121		%REC	161941	20	06/02/2012 19:40	KD
PERCENT MOISTURE D2216								
Percent Moisture	16.3	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-6-8
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:34:00 PM
Lab ID:	1205I87-014	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	231	86.6		mg/Kg-dry	161958	10	05/31/2012 06:19	JY
Copper	210	1.15		mg/Kg-dry	161958	10	05/31/2012 06:19	JY
Zinc	181	5.77		mg/Kg-dry	161958	10	05/31/2012 06:19	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	BRL	0.0041		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
4,4´-DDE	BRL	0.0041		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
4,4´-DDT	0.021	0.0041		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
alpha-BHC	0.0053	0.0021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
alpha-Chlordane	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
beta-BHC	0.015	0.0021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
delta-BHC	0.0034	0.0021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
Dieldrin	BRL	0.0041		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
gamma-BHC	0.0025	0.0021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
gamma-Chlordane	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
Heptachlor	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
Methoxychlor	BRL	0.021		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
Toxaphene	BRL	0.21		mg/Kg-dry	161941	1	06/02/2012 19:51	KD
Surr: Decachlorobiphenyl	53.3	26.2-127		%REC	161941	1	06/02/2012 19:51	KD
Surr: Tetrachloro-m-xylene	48.8	26.9-121		%REC	161941	1	06/02/2012 19:51	KD
PERCENT MOISTURE D2216								
Percent Moisture	19.0	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-8-10
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:35:00 PM
Lab ID:	1205I87-015	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	392	92.4		mg/Kg-dry	161958	10	05/31/2012 06:25	JY
Copper	126	1.23		mg/Kg-dry	161958	10	05/31/2012 06:25	JY
Zinc	125	6.16		mg/Kg-dry	161958	10	05/31/2012 06:25	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	0.0043	0.0042		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
4,4´-DDE	0.011	0.0042		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
4,4´-DDT	0.043	0.0042		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
alpha-BHC	0.15	0.011		mg/Kg-dry	161941	5	06/05/2012 20:33	KD
alpha-Chlordane	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
beta-BHC	0.073	0.011		mg/Kg-dry	161941	5	06/05/2012 20:33	KD
delta-BHC	0.069	0.011		mg/Kg-dry	161941	5	06/05/2012 20:33	KD
Dieldrin	0.017	0.0042		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
gamma-BHC	0.099	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
gamma-Chlordane	0.0028	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
Heptachlor	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
Methoxychlor	BRL	0.021		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
Toxaphene	BRL	0.21		mg/Kg-dry	161941	1	06/02/2012 20:02	KD
Surr: Decachlorobiphenyl	75.5	26.2-127		%REC	161941	1	06/02/2012 20:02	KD
Surr: Tetrachloro-m-xylene	56.3	26.9-121		%REC	161941	1	06/02/2012 20:02	KD
PERCENT MOISTURE D2216								
Percent Moisture	21.1	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:36:00 PM
Lab ID:	1205I87-016	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	92.0		mg/Kg-dry	161958	10	05/31/2012 06:50	JY
Copper	91.0	1.23		mg/Kg-dry	161958	10	05/31/2012 06:50	JY
Zinc	61.3	6.13		mg/Kg-dry	161958	10	05/31/2012 06:50	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	BRL	0.0041		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
4,4´-DDE	0.010	0.0041		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
4,4´-DDT	0.028	0.0041		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
alpha-BHC	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
alpha-Chlordane	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
beta-BHC	0.0043	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
delta-BHC	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
Dieldrin	0.0058	0.0041		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
gamma-BHC	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
gamma-Chlordane	0.0031	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
Heptachlor	BRL	0.0021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
Methoxychlor	BRL	0.021		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
Toxaphene	BRL	0.21		mg/Kg-dry	161941	1	06/02/2012 20:57	KD
Surr: Decachlorobiphenyl	39	26.2-127		%REC	161941	1	06/02/2012 20:57	KD
Surr: Tetrachloro-m-xylene	39.2	26.9-121		%REC	161941	1	06/02/2012 20:57	KD
PERCENT MOISTURE D2216								
Percent Moisture	18.8	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-12-14
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:37:00 PM
Lab ID:	1205I87-017	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	88.9		mg/Kg-dry	161958	10	05/31/2012 04:44	JY
Copper	61.8	1.18		mg/Kg-dry	161958	10	05/31/2012 04:44	JY
Zinc	62.0	5.92		mg/Kg-dry	161958	10	05/31/2012 04:44	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	BRL	0.0040		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
4,4´-DDE	0.0061	0.0040		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
4,4´-DDT	0.018	0.0040		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
alpha-BHC	BRL	0.0020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
alpha-Chlordane	BRL	0.0020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
beta-BHC	0.0063	0.0020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
delta-BHC	BRL	0.0020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
Dieldrin	BRL	0.0040		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
gamma-BHC	BRL	0.0020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
gamma-Chlordane	BRL	0.0020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
Heptachlor	BRL	0.0020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
Methoxychlor	BRL	0.020		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
Toxaphene	BRL	0.20		mg/Kg-dry	161941	1	06/02/2012 21:08	KD
Surr: Decachlorobiphenyl	57.7	26.2-127		%REC	161941	1	06/02/2012 21:08	KD
Surr: Tetrachloro-m-xylene	73.2	26.9-121		%REC	161941	1	06/02/2012 21:08	KD
PERCENT MOISTURE D2216								
Percent Moisture	17.6	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-14-16
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:38:00 PM
Lab ID:	1205I87-018	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	88.5		mg/Kg-dry	161958	10	05/31/2012 06:56	JY
Copper	52.5	1.18		mg/Kg-dry	161958	10	05/31/2012 06:56	JY
Zinc	77.4	5.90		mg/Kg-dry	161958	10	05/31/2012 06:56	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	0.11	0.020		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
4,4´-DDE	0.20	0.020		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
4,4´-DDT	0.85	0.20		mg/Kg-dry	161941	50	06/02/2012 21:29	KD
alpha-BHC	0.027	0.010		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
alpha-Chlordane	0.020	0.010		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
beta-BHC	0.30	0.010		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
delta-BHC	0.028	0.010		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
Dieldrin	0.35	0.020		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
gamma-BHC	0.021	0.010		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
gamma-Chlordane	0.11	0.010		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
Heptachlor	0.034	0.010		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
Methoxychlor	BRL	0.10		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
Toxaphene	1.0	1.0		mg/Kg-dry	161941	5	06/02/2012 21:19	KD
Surr: Decachlorobiphenyl	79.3	26.2-127		%REC	161941	5	06/02/2012 21:19	KD
Surr: Tetrachloro-m-xylene	81.5	26.9-121		%REC	161941	5	06/02/2012 21:19	KD
PERCENT MOISTURE D2216								
Percent Moisture	17.8	0		wt%	R222053	1	05/24/2012 18:30	AS

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client AMEC Work Order Number 1205187

Checklist completed by [signature] 05/23/2012
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.5 Cooler #2 4.3 Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205I87

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205I87-001A	SB-E-0-2	5/21/2012 10:25:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-001A	SB-E-0-2	5/21/2012 10:25:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/05/2012
1205I87-001A	SB-E-0-2	5/21/2012 10:25:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/06/2012
1205I87-001A	SB-E-0-2	5/21/2012 10:25:00AM	Soil	TCL-SEMIVOLATILE ORGANICS		05/24/2012	05/29/2012
1205I87-001A	SB-E-0-2	5/21/2012 10:25:00AM	Soil	Semivolatile Org. Comp. by GC/MS		05/24/2012	05/29/2012
1205I87-001A	SB-E-0-2	5/21/2012 10:25:00AM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-002A	SB-E-2-4	5/21/2012 10:25:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-002A	SB-E-2-4	5/21/2012 10:25:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/05/2012
1205I87-002A	SB-E-2-4	5/21/2012 10:25:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/06/2012
1205I87-002A	SB-E-2-4	5/21/2012 10:25:00AM	Soil	TCL-SEMIVOLATILE ORGANICS		05/24/2012	05/29/2012
1205I87-002A	SB-E-2-4	5/21/2012 10:25:00AM	Soil	Semivolatile Org. Comp. by GC/MS		05/24/2012	05/29/2012
1205I87-002A	SB-E-2-4	5/21/2012 10:25:00AM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-003A	SB-F-0-2	5/21/2012 1:30:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-003A	SB-F-0-2	5/21/2012 1:30:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-003A	SB-F-0-2	5/21/2012 1:30:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/05/2012
1205I87-003A	SB-F-0-2	5/21/2012 1:30:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-004A	SB-F-2-4	5/21/2012 1:30:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-004A	SB-F-2-4	5/21/2012 1:30:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-004A	SB-F-2-4	5/21/2012 1:30:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/05/2012
1205I87-004A	SB-F-2-4	5/21/2012 1:30:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/06/2012
1205I87-004A	SB-F-2-4	5/21/2012 1:30:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-005A	SB-G-0-2	5/21/2012 3:30:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-005A	SB-G-0-2	5/21/2012 3:30:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-006A	SB-G-2-4	5/21/2012 3:30:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-006A	SB-G-2-4	5/21/2012 3:30:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-007A	SB-G-4-6	5/21/2012 3:30:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-007A	SB-G-4-6	5/21/2012 3:30:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-008A	SB-SS2-0-2	5/22/2012 9:37:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-008A	SB-SS2-0-2	5/22/2012 9:37:00AM	Soil	PERCENT MOISTURE			05/24/2012

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205I87

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205I87-009A	SB-SS2-2-4	5/22/2012 9:37:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-009A	SB-SS2-2-4	5/22/2012 9:37:00AM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-010A	SB-SS3-0-2	5/22/2012 10:19:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-010A	SB-SS3-0-2	5/22/2012 10:19:00AM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-011A	SB-SS3-2-4	5/22/2012 10:19:00AM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-011A	SB-SS3-2-4	5/22/2012 10:19:00AM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-012A	SB-A-0-2	5/22/2012 4:32:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-012A	SB-A-0-2	5/22/2012 4:32:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-012A	SB-A-0-2	5/22/2012 4:32:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/05/2012
1205I87-012A	SB-A-0-2	5/22/2012 4:32:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-013A	SB-A-3-5	5/22/2012 4:33:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-013A	SB-A-3-5	5/22/2012 4:33:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-013A	SB-A-3-5	5/22/2012 4:33:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-014A	SB-A-6-8	5/22/2012 4:34:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-014A	SB-A-6-8	5/22/2012 4:34:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-014A	SB-A-6-8	5/22/2012 4:34:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-015A	SB-A-8-10	5/22/2012 4:35:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-015A	SB-A-8-10	5/22/2012 4:35:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-015A	SB-A-8-10	5/22/2012 4:35:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/05/2012
1205I87-015A	SB-A-8-10	5/22/2012 4:35:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-016A	SB-A-10-12	5/22/2012 4:36:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-016A	SB-A-10-12	5/22/2012 4:36:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-016A	SB-A-10-12	5/22/2012 4:36:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-017A	SB-A-12-14	5/22/2012 4:37:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-017A	SB-A-12-14	5/22/2012 4:37:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-017A	SB-A-12-14	5/22/2012 4:37:00PM	Soil	PERCENT MOISTURE			05/24/2012
1205I87-018A	SB-A-14-16	5/22/2012 4:38:00PM	Soil	Metals by ICP/MS		05/25/2012	05/31/2012
1205I87-018A	SB-A-14-16	5/22/2012 4:38:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205I87-018A	SB-A-14-16	5/22/2012 4:38:00PM	Soil	PERCENT MOISTURE			05/24/2012

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205I87

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205I87

ANALYTICAL QC SUMMARY REPORT

BatchID: 161919

Sample ID: **MB-161919** Client ID: Units: **ug/Kg** Prep Date: **05/24/2012** Run No: **222021**
SampleType: **MBLK** TestCode: **TCL-SEMIVOLATILE ORGANICS SW8270D** BatchID: **161919** Analysis Date: **05/25/2012** Seq No: **4643643**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	BRL	330	0	0	0	0	0	0	0	0	
Surr: 2,4,6-Tribromophenol	3559	0	3333	0	107	41.1	130	0	0	0	
Surr: 2-Fluorobiphenyl	1389	0	1667	0	83.3	45	120	0	0	0	
Surr: 2-Fluorophenol	2590	0	3333	0	77.7	35	120	0	0	0	
Surr: 4-Terphenyl-d14	1745	0	1667	0	105	50.1	123	0	0	0	
Surr: Nitrobenzene-d5	1135	0	1667	0	68.1	37.5	120	0	0	0	
Surr: Phenol-d5	2510	0	3333	0	75.3	39	120	0	0	0	

Sample ID: **LCS-161919** Client ID: Units: **ug/Kg** Prep Date: **05/24/2012** Run No: **222021**
SampleType: **LCS** TestCode: **TCL-SEMIVOLATILE ORGANICS SW8270D** BatchID: **161919** Analysis Date: **05/25/2012** Seq No: **4643660**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	2986	330	3333	0	89.6	57.6	120	0	0	0	
Surr: 2,4,6-Tribromophenol	3967	0	3333	0	119	41.1	130	0	0	0	
Surr: 2-Fluorobiphenyl	1437	0	1667	0	86.2	45	120	0	0	0	
Surr: 2-Fluorophenol	2715	0	3333	0	81.5	35	120	0	0	0	
Surr: 4-Terphenyl-d14	1874	0	1667	0	112	50.1	123	0	0	0	
Surr: Nitrobenzene-d5	1188	0	1667	0	71.3	37.5	120	0	0	0	
Surr: Phenol-d5	2684	0	3333	0	80.5	39	120	0	0	0	

Sample ID: **1205H12-004AMS** Client ID: Units: **ug/Kg-dry** Prep Date: **05/24/2012** Run No: **222021**
SampleType: **MS** TestCode: **TCL-SEMIVOLATILE ORGANICS SW8270D** BatchID: **161919** Analysis Date: **05/25/2012** Seq No: **4645137**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	3746	2300	4605	0	81.4	40.3	120	0	0	0	
Surr: 2,4,6-Tribromophenol	4872	0	4605	0	106	41.1	130	0	0	0	
Surr: 2-Fluorobiphenyl	1927	0	2303	0	83.7	45	120	0	0	0	
Surr: 2-Fluorophenol	3327	0	4605	0	72.3	35	120	0	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205I87

ANALYTICAL QC SUMMARY REPORT

BatchID: **161919**

Sample ID: **1205H12-004AMS** Client ID: Units: **ug/Kg-dry** Prep Date: **05/24/2012** Run No: **222021**
SampleType: **MS** TestCode: **TCL-SEMIVOLATILE ORGANICS SW8270D** BatchID: **161919** Analysis Date: **05/25/2012** Seq No: **4645137**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Surr: 4-Terphenyl-d14	2243	0	2303	0	97.4	50.1	123	0	0	0	
Surr: Nitrobenzene-d5	1474	0	2303	0	64	37.5	120	0	0	0	
Surr: Phenol-d5	3369	0	4605	0	73.2	39	120	0	0	0	

Sample ID: **1205H12-004AMSD** Client ID: Units: **ug/Kg-dry** Prep Date: **05/24/2012** Run No: **222021**
SampleType: **MSD** TestCode: **TCL-SEMIVOLATILE ORGANICS SW8270D** BatchID: **161919** Analysis Date: **05/25/2012** Seq No: **4645138**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
2,4-Dinitrotoluene	3316	2300	4611	0	71.9	40.3	120	3746	12.2	20.9	
Surr: 2,4,6-Tribromophenol	4337	0	4611	0	94.1	41.1	130	4872	0	0	
Surr: 2-Fluorobiphenyl	1764	0	2306	0	76.5	45	120	1927	0	0	
Surr: 2-Fluorophenol	2921	0	4611	0	63.4	35	120	3327	0	0	
Surr: 4-Terphenyl-d14	2031	0	2306	0	88.1	50.1	123	2243	0	0	
Surr: Nitrobenzene-d5	1406	0	2306	0	61	37.5	120	1474	0	0	
Surr: Phenol-d5	3103	0	4611	0	67.3	39	120	3369	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205I87

ANALYTICAL QC SUMMARY REPORT

BatchID: 161941

Sample ID: **MB-161941** Client ID: Units: **ug/Kg** Prep Date: **05/29/2012** Run No: **222417**
SampleType: **MBLK** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **05/31/2012** Seq No: **4652633**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDD	BRL	3.3	0	0	0	0	0	0	0	0	
4,4´-DDE	BRL	3.3	0	0	0	0	0	0	0	0	
4,4´-DDT	BRL	3.3	0	0	0	0	0	0	0	0	
alpha-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
alpha-Chlordane	BRL	1.7	0	0	0	0	0	0	0	0	
beta-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
delta-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
Dieldrin	BRL	3.3	0	0	0	0	0	0	0	0	
gamma-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
gamma-Chlordane	BRL	1.7	0	0	0	0	0	0	0	0	
Heptachlor	BRL	1.7	0	0	0	0	0	0	0	0	
Methoxychlor	BRL	17	0	0	0	0	0	0	0	0	
Toxaphene	BRL	170	0	0	0	0	0	0	0	0	
Surr: Decachlorobiphenyl	17.90	0	16.67	0	107	26.2	127	0	0	0	
Surr: Tetrachloro-m-xylene	21.09	0	16.67	0	127	26.9	121	0	0	0	S

Sample ID: **LCS-161941** Client ID: Units: **ug/Kg** Prep Date: **05/29/2012** Run No: **222417**
SampleType: **LCS** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **05/31/2012** Seq No: **4652635**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	38.41	3.3	33.33	0	115	44.5	138	0	0	0	
Dieldrin	37.48	3.3	33.33	0	112	47.5	132	0	0	0	
gamma-BHC	36.06	1.7	33.33	0	108	40.8	130	0	0	0	
Heptachlor	33.96	1.7	33.33	0	102	38.8	134	0	0	0	
Surr: Decachlorobiphenyl	13.62	0	16.67	0	81.7	26.2	127	0	0	0	
Surr: Tetrachloro-m-xylene	12.65	0	16.67	0	75.9	26.9	121	0	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205I87

ANALYTICAL QC SUMMARY REPORT

BatchID: 161941

Sample ID: **1205I87-011AMS** Client ID: **SB-SS3-2-4** Units: **ug/Kg-dry** Prep Date: **05/29/2012** Run No: **222481**
SampleType: **MS** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **06/02/2012** Seq No: **4654302**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	44.28	3.6	36.39	0.007930	122	25.1	151	0	0	0	
Dieldrin	39.12	3.6	36.39	0.004081	108	33.5	137	0	0	0	
gamma-BHC	36.02	1.8	36.39	0	99	35.8	129	0	0	0	
Heptachlor	34.61	1.8	36.39	0.0007825	95.1	30.8	131	0	0	0	
Surr: Decachlorobiphenyl	8.694	0	18.2	0	47.8	26.2	127	0	0	0	
Surr: Tetrachloro-m-xylene	13.08	0	18.2	0	71.9	26.9	121	0	0	0	

Sample ID: **1205I87-011AMSD** Client ID: **SB-SS3-2-4** Units: **ug/Kg-dry** Prep Date: **05/29/2012** Run No: **222481**
SampleType: **MSD** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **06/02/2012** Seq No: **4654303**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	45.22	3.6	36.42	0.007930	124	25.1	151	44.28	2.1	37.7	
Dieldrin	38.33	3.6	36.42	0.004081	105	33.5	137	39.12	2.06	30.8	
gamma-BHC	34.17	1.8	36.42	0	93.8	35.8	129	36.02	5.26	31.3	
Heptachlor	33.14	1.8	36.42	0.0007825	91	30.8	131	34.61	4.35	30.8	
Surr: Decachlorobiphenyl	8.326	0	18.22	0	45.7	26.2	127	8.694	0	0	
Surr: Tetrachloro-m-xylene	12.70	0	18.22	0	69.7	26.9	121	13.08	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205I87

ANALYTICAL QC SUMMARY REPORT

BatchID: **161958**

Sample ID: **MB-161958** Client ID: Units: **mg/Kg** Prep Date: **05/25/2012** Run No: **222269**
SampleType: **MBLK** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161958** Analysis Date: **05/31/2012** Seq No: **4649013**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	7.50	0	0	0	0	0	0	0	0	
Copper	BRL	0.10	0	0	0	0	0	0	0	0	
Lead	BRL	0.05	0	0	0	0	0	0	0	0	
Zinc	BRL	0.50	0	0	0	0	0	0	0	0	

Sample ID: **LCS-161958** Client ID: Units: **mg/Kg** Prep Date: **05/25/2012** Run No: **222269**
SampleType: **LCS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161958** Analysis Date: **05/31/2012** Seq No: **4649012**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	7.50	5	0	97.3	80	120	0	0	0	
Copper	5.245	0.10	5	0.03625	104	80	120	0	0	0	
Lead	5.505	0.05	5	0	110	80	120	0	0	0	
Zinc	4.838	0.50	5	0.1124	94.5	80	120	0	0	0	

Sample ID: **1205I87-017AMS** Client ID: **SB-A-12-14** Units: **mg/Kg-dry** Prep Date: **05/25/2012** Run No: **222269**
SampleType: **MS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161958** Analysis Date: **05/31/2012** Seq No: **4649015**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	88.9	5.928	10.24	91.3	75	125	0	0	0	
Copper	71.01	1.19	5.928	61.84	155	75	125	0	0	0	S
Lead	33.06	0.59	5.928	22.31	181	75	125	0	0	0	S
Zinc	69.89	5.93	5.928	61.96	134	75	125	0	0	0	S

Sample ID: **1205I87-017AMSD** Client ID: **SB-A-12-14** Units: **mg/Kg-dry** Prep Date: **05/25/2012** Run No: **222269**
SampleType: **MSD** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161958** Analysis Date: **05/31/2012** Seq No: **4649016**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	88.8	5.921	10.24	49.3	75	125	15.65	0	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205I87

ANALYTICAL QC SUMMARY REPORT

BatchID: 161958

Sample ID: **1205I87-017AMSD** Client ID: **SB-A-12-14** Units: **mg/Kg-dry** Prep Date: **05/25/2012** Run No: **222269**
SampleType: **MSD** TestCode: **Metals by ICP/MS SW6020A** BatchID: **161958** Analysis Date: **05/31/2012** Seq No: **4649016**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	65.37	1.18	5.921	61.84	59.6	75	125	71.01	8.27	20	S
Lead	27.64	0.59	5.921	22.31	90	75	125	33.06	17.9	20	
Zinc	64.13	5.92	5.921	61.96	36.6	75	125	69.89	8.6	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 25, 2012

Rhonda Quinn
AMEC E&I, Inc.
3200 Town Point Dr.
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1205L58

Analytical Environmental Services, Inc. received 17samples on May 24, 2012 2:45 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

Revision 7/25/2012

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205258

Composites

Date: 5-24-12 Page 1 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100, Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE: [signature]

ANALYSIS REQUESTED: Arsenic, Hexavalent; Copper, Zinc; Arsenic, Lead; Copper, Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

PRESERVATION (See codes): 4°

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Arsenic, Hexavalent	Copper, Zinc	Arsenic, Lead	Copper, Zinc	REMARKS	No # of Containers
1	SB-B-0-2	5-23-12	12:36		✓	SO	1			X		1
2	SB-B-3-5	5-23-12	12:37		✓	SO	1			X		1
3	SB-B-6-8	5-23-12	12:38		✓	SO	1			X		1
4	SB-B-8-10	5-23-12	12:39		✓	SO	1			X		1
5	SB-B-10-12	5-23-12	12:40		✓	SO	1			X		1
6	SB-H-0-2	5-23-12	1644		✓	SO		1		X		1
7	SB-H-3-5	5-23-12	1645		✓	SO		1		X		1
8	SB-H-6-8	5-23-12	1646		✓	SO		1		X		1
9	SB-H-8-10	5-23-12	1647		✓	SO		1		X		1
10	SB-H-10-12	5-23-12	1648		✓	SO		1		X		1
11	SB-H-14-16	5-23-12	1649		✓	SO		1		X		1
12	SB-HIII-0-2	5-24-12	10:38		✓	SO		1		JAM 5-24-12		1
13	SB-HIII-2-4	5-24-12	10:39		✓	SO		1				1
14	SB-HIII-4-6	5-24-12	10:40		✓	SO		1				1

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	5-24-12 2:40	1: [signature]	5/24/12
2:		2:	2:45
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers 17 Total Run

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? (Y) / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205158

Composites

Date: 5-24-12 Page 2 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE: Jeffrey L. Moore

ANALYSIS REQUESTED: Arsenic, Lead, Copper, Zinc; Arsenic, Copper, Zinc

PRESERVATION (See codes): 4°

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Arsenic, Lead, Copper, Zinc	Arsenic, Copper, Zinc	REMARKS	No # of Containers
1	SB-H111-6-8	5-24-12	10:41		✓	SO	1			1
2	SB-W101-0-2	5-24-12	12:56		✓	SO		1		1
3	SB-W101-2-4	5-24-12	12:57		✓	SO		1		1
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffrey L. Moore	5-24-12 2:40	1: [illegible]	5/24/12 2:45
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers 17 Total Run

Turnaround Time Request
☒ Standard 5 Business Days
○ 2 Business Day Rush
○ Next Business Day Rush
○ Same Day Rush (auth req.)
○ Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 25-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab ID: 1205L58

Case Narrative

Metals by ICP/MS Analysis by Method 6020:

Due to sample matrix, samples 1205L58-001A through -017A required dilution during preparation and/or analysis resulting in elevated reporting limits.

Pesticide Analysis by Method 8081B:

Due to sample matrix, samples 1205L58-001A, -002A, -003A, -004A and -005A required dilution during analysis resulting in elevated reporting limits.

The report was revised to remove the Method Detection Limits (MDL), to remove Aldrin from sample 1205L58-002A, and to change the reporting units to mg/Kg per email instructions from Rhonda Quinn on 7/19/12.

Analytical Environmental Services, Inc

Date: 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-B-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 12:36:00 PM
Lab ID:	1205L58-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	1500	93.0		mg/Kg-dry	162011	10	05/31/2012 07:46	JY
Copper	299	1.24		mg/Kg-dry	162011	10	05/31/2012 07:46	JY
Zinc	328	6.20		mg/Kg-dry	162011	10	05/31/2012 07:46	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	18	0.83		mg/Kg-dry	161941	200	06/06/2012 12:54	KD
4,4´-DDE	0.90	0.083		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
4,4´-DDT	260	21		mg/Kg-dry	161941	5000	06/06/2012 16:33	KD
alpha-BHC	0.28	0.042		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
alpha-Chlordane	0.18	0.042		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
beta-BHC	3.0	0.21		mg/Kg-dry	161941	100	06/06/2012 12:31	KD
delta-BHC	0.73	0.042		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
Dieldrin	0.55	0.083		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
gamma-BHC	0.19	0.042		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
gamma-Chlordane	0.56	0.042		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
Heptachlor	1.3	0.042		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
Methoxychlor	BRL	0.42		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
Toxaphene	8.1	4.2		mg/Kg-dry	161941	20	06/02/2012 21:40	KD
Surr: Decachlorobiphenyl	55.5	26.2-127		%REC	161941	20	06/02/2012 21:40	KD
Surr: Tetrachloro-m-xylene	40.9	26.9-121		%REC	161941	20	06/02/2012 21:40	KD
PERCENT MOISTURE D2216								
Percent Moisture	19.6	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-B-3-5
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 12:37:00 PM
Lab ID:	1205L58-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	305	90.9		mg/Kg-dry	162011	10	05/31/2012 08:25	JY
Copper	241	1.21		mg/Kg-dry	162011	10	05/31/2012 08:25	JY
Zinc	330	6.06		mg/Kg-dry	162011	10	05/31/2012 08:25	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	1.4	0.085		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
4,4´-DDE	0.15	0.085		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
4,4´-DDT	7.1	0.85		mg/Kg-dry	161941	200	06/06/2012 12:56	KD
alpha-BHC	0.065	0.043		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
alpha-Chlordane	0.054	0.043		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
beta-BHC	0.57	0.043		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
delta-BHC	BRL	0.043		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
Dieldrin	0.23	0.085		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
gamma-BHC	BRL	0.043		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
gamma-Chlordane	0.17	0.043		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
Heptachlor	0.055	0.043		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
Methoxychlor	BRL	0.43		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
Toxaphene	BRL	4.3		mg/Kg-dry	161941	20	06/02/2012 21:51	KD
Surr: Decachlorobiphenyl	55.4	26.2-127		%REC	161941	20	06/02/2012 21:51	KD
Surr: Tetrachloro-m-xylene	53.5	26.9-121		%REC	161941	20	06/02/2012 21:51	KD
PERCENT MOISTURE D2216								
Percent Moisture	21.8	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-B-6-8
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 12:38:00 PM
Lab ID:	1205L58-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	161	91.6		mg/Kg-dry	162011	10	05/31/2012 08:32	JY
Copper	504	1.22		mg/Kg-dry	162011	10	05/31/2012 08:32	JY
Zinc	308	6.11		mg/Kg-dry	162011	10	05/31/2012 08:32	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	BRL	0.084		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
4,4´-DDE	BRL	0.084		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
4,4´-DDT	0.13	0.084		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
alpha-BHC	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
alpha-Chlordane	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
beta-BHC	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
delta-BHC	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
Dieldrin	BRL	0.084		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
gamma-BHC	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
gamma-Chlordane	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
Heptachlor	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
Methoxychlor	BRL	0.42		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
Toxaphene	BRL	4.2		mg/Kg-dry	161941	20	06/02/2012 22:03	KD
Surr: Decachlorobiphenyl	52.8	26.2-127		%REC	161941	20	06/02/2012 22:03	KD
Surr: Tetrachloro-m-xylene	50	26.9-121		%REC	161941	20	06/02/2012 22:03	KD
PERCENT MOISTURE D2216								
Percent Moisture	20.5	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-B-8-10
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 12:39:00 PM
Lab ID:	1205L58-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	91.7		mg/Kg-dry	162011	10	05/31/2012 08:38	JY
Copper	247	1.22		mg/Kg-dry	162011	10	05/31/2012 08:38	JY
Zinc	522	6.11		mg/Kg-dry	162011	10	05/31/2012 08:38	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	0.24	0.085		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
4,4´-DDE	BRL	0.085		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
4,4´-DDT	2.4	0.085		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
alpha-BHC	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
alpha-Chlordane	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
beta-BHC	0.30	0.042		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
delta-BHC	0.22	0.042		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
Dieldrin	BRL	0.085		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
gamma-BHC	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
gamma-Chlordane	BRL	0.042		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
Heptachlor	0.12	0.042		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
Methoxychlor	BRL	0.42		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
Toxaphene	BRL	4.2		mg/Kg-dry	161941	20	06/02/2012 22:13	KD
Surr: Decachlorobiphenyl	47.2	26.2-127		%REC	161941	20	06/02/2012 22:13	KD
Surr: Tetrachloro-m-xylene	67.6	26.9-121		%REC	161941	20	06/02/2012 22:13	KD
PERCENT MOISTURE D2216								
Percent Moisture	21.4	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-B-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 12:40:00 PM
Lab ID:	1205L58-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	119	92.3		mg/Kg-dry	162011	10	05/31/2012 08:45	JY
Copper	270	1.23		mg/Kg-dry	162011	10	05/31/2012 08:45	JY
Zinc	276	6.15		mg/Kg-dry	162011	10	05/31/2012 08:45	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3550C)**				
4,4´-DDD	2.4	0.086		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
4,4´-DDE	0.16	0.086		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
4,4´-DDT	20	2.2		mg/Kg-dry	161941	500	06/06/2012 13:18	KD
alpha-BHC	0.070	0.043		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
alpha-Chlordane	BRL	0.043		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
beta-BHC	2.9	0.22		mg/Kg-dry	161941	100	06/06/2012 10:59	KD
delta-BHC	0.69	0.043		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
Dieldrin	0.18	0.086		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
gamma-BHC	BRL	0.043		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
gamma-Chlordane	0.10	0.043		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
Heptachlor	0.32	0.043		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
Methoxychlor	BRL	0.43		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
Toxaphene	BRL	4.3		mg/Kg-dry	161941	20	06/02/2012 22:24	KD
Surr: Decachlorobiphenyl	41.2	26.2-127		%REC	161941	20	06/02/2012 22:24	KD
Surr: Tetrachloro-m-xylene	65.6	26.9-121		%REC	161941	20	06/02/2012 22:24	KD
PERCENT MOISTURE D2216								
Percent Moisture	22.7	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:44:00 PM
Lab ID:	1205L58-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	202	87.5		mg/Kg-dry	162011	10	05/31/2012 08:51	JY
Copper	511	1.17		mg/Kg-dry	162011	10	05/31/2012 08:51	JY
Lead	3920	0.58		mg/Kg-dry	162011	10	05/31/2012 08:51	JY
Zinc	662	5.83		mg/Kg-dry	162011	10	05/31/2012 08:51	JY
PERCENT MOISTURE D2216								
Percent Moisture	18.7	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-3-5
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:45:00 PM
Lab ID:	1205L58-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	256	82.1		mg/Kg-dry	162011	10	05/31/2012 07:14	JY
Copper	354	1.10		mg/Kg-dry	162011	10	05/31/2012 07:14	JY
Lead	3550	0.55		mg/Kg-dry	162011	10	05/31/2012 07:14	JY
Zinc	409	5.48		mg/Kg-dry	162011	10	05/31/2012 07:14	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.7	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-6-8
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:46:00 PM
Lab ID:	1205L58-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	134	86.7		mg/Kg-dry	162011	10	05/31/2012 08:57	JY
Copper	186	1.16		mg/Kg-dry	162011	10	05/31/2012 08:57	JY
Lead	803	0.58		mg/Kg-dry	162011	10	05/31/2012 08:57	JY
Zinc	427	5.78		mg/Kg-dry	162011	10	05/31/2012 08:57	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.3	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-8-10
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:47:00 PM
Lab ID:	1205L58-009	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	193	89.9		mg/Kg-dry	162011	10	05/31/2012 09:04	JY
Copper	386	1.20		mg/Kg-dry	162011	10	05/31/2012 09:04	JY
Lead	2020	0.60		mg/Kg-dry	162011	10	05/31/2012 09:04	JY
Zinc	439	6.00		mg/Kg-dry	162011	10	05/31/2012 09:04	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.0	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:48:00 PM
Lab ID:	1205L58-010	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	195	90.2		mg/Kg-dry	162011	10	05/31/2012 09:10	JY
Copper	493	1.20		mg/Kg-dry	162011	10	05/31/2012 09:10	JY
Lead	2500	0.60		mg/Kg-dry	162011	10	05/31/2012 09:10	JY
Zinc	963	6.02		mg/Kg-dry	162011	10	05/31/2012 09:10	JY
PERCENT MOISTURE D2216								
Percent Moisture	19.8	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-14-16
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:49:00 PM
Lab ID:	1205L58-011	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	114	95.3		mg/Kg-dry	162011	10	05/31/2012 09:16	JY
Copper	274	1.27		mg/Kg-dry	162011	10	05/31/2012 09:16	JY
Lead	1530	0.64		mg/Kg-dry	162011	10	05/31/2012 09:16	JY
Zinc	702	6.35		mg/Kg-dry	162011	10	05/31/2012 09:16	JY
PERCENT MOISTURE D2216								
Percent Moisture	21.9	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H111-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/24/2012 10:38:00 AM
Lab ID:	1205L58-012	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	87.0		mg/Kg-dry	162011	10	05/31/2012 09:23	JY
Copper	56.6	1.16		mg/Kg-dry	162011	10	05/31/2012 09:23	JY
Lead	2490	0.58		mg/Kg-dry	162011	10	05/31/2012 09:23	JY
Zinc	117	5.80		mg/Kg-dry	162011	10	05/31/2012 09:23	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.8	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H111-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/24/2012 10:39:00 AM
Lab ID:	1205L58-013	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	81.2		mg/Kg-dry	162011	10	05/31/2012 09:57	JY
Copper	61.4	1.08		mg/Kg-dry	162011	10	05/31/2012 09:57	JY
Lead	4870	0.54		mg/Kg-dry	162011	10	05/31/2012 09:57	JY
Zinc	178	5.41		mg/Kg-dry	162011	10	05/31/2012 09:57	JY
PERCENT MOISTURE D2216								
Percent Moisture	12.4	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H111-4-6
Project Name:	BFEL-Atlanta	**Collection Date:**	5/24/2012 10:40:00 AM
Lab ID:	1205L58-014	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	84.2		mg/Kg-dry	162011	10	05/31/2012 10:03	JY
Copper	40.4	1.12		mg/Kg-dry	162011	10	05/31/2012 10:03	JY
Lead	1710	0.56		mg/Kg-dry	162011	10	05/31/2012 10:03	JY
Zinc	108	5.61		mg/Kg-dry	162011	10	05/31/2012 10:03	JY
PERCENT MOISTURE D2216								
Percent Moisture	12.8	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H111-6-8
Project Name:	BFEL-Atlanta	**Collection Date:**	5/24/2012 10:41:00 AM
Lab ID:	1205L58-015	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	81.0		mg/Kg-dry	162011	10	05/31/2012 10:10	JY
Copper	12.4	1.08		mg/Kg-dry	162011	10	05/31/2012 10:10	JY
Lead	129	0.54		mg/Kg-dry	162011	10	05/31/2012 10:10	JY
Zinc	48.0	5.40		mg/Kg-dry	162011	10	05/31/2012 10:10	JY
PERCENT MOISTURE D2216								
Percent Moisture	12.4	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-W101-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/24/2012 12:56:00 PM
Lab ID:	1205L58-016	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	88.6		mg/Kg-dry	162011	10	05/31/2012 10:16	JY
Copper	61.9	1.18		mg/Kg-dry	162011	10	05/31/2012 10:16	JY
Zinc	123	5.91		mg/Kg-dry	162011	10	05/31/2012 10:16	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.5	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 25-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-W101-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/24/2012 12:57:00 PM
Lab ID:	1205L58-017	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Metals by ICP/MS SW6020A				**(SW3050B)**				
Arsenic	BRL	88.2		mg/Kg-dry	162011	10	05/31/2012 10:22	JY
Copper	163	1.18		mg/Kg-dry	162011	10	05/31/2012 10:22	JY
Zinc	294	5.88		mg/Kg-dry	162011	10	05/31/2012 10:22	JY
PERCENT MOISTURE D2216								
Percent Moisture	16.7	0		wt%	R222140	1	05/29/2012 17:32	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Anec Work Order Number 1205L58

Checklist completed by [signature] 05/25/2012
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.7 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205L58

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205L58-001A	SB-B-0-2	5/23/2012 12:36:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-001A	SB-B-0-2	5/23/2012 12:36:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205L58-001A	SB-B-0-2	5/23/2012 12:36:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/06/2012
1205L58-001A	SB-B-0-2	5/23/2012 12:36:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-002A	SB-B-3-5	5/23/2012 12:37:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-002A	SB-B-3-5	5/23/2012 12:37:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205L58-002A	SB-B-3-5	5/23/2012 12:37:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/06/2012
1205L58-002A	SB-B-3-5	5/23/2012 12:37:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-003A	SB-B-6-8	5/23/2012 12:38:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-003A	SB-B-6-8	5/23/2012 12:38:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205L58-003A	SB-B-6-8	5/23/2012 12:38:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-004A	SB-B-8-10	5/23/2012 12:39:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-004A	SB-B-8-10	5/23/2012 12:39:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205L58-004A	SB-B-8-10	5/23/2012 12:39:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-005A	SB-B-10-12	5/23/2012 12:40:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-005A	SB-B-10-12	5/23/2012 12:40:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/02/2012
1205L58-005A	SB-B-10-12	5/23/2012 12:40:00PM	Soil	TCL-CHLORINATED PESTICIDES		05/29/2012	06/06/2012
1205L58-005A	SB-B-10-12	5/23/2012 12:40:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-006A	SB-H-0-2	5/23/2012 4:44:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-006A	SB-H-0-2	5/23/2012 4:44:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-007A	SB-H-3-5	5/23/2012 4:45:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-007A	SB-H-3-5	5/23/2012 4:45:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-008A	SB-H-6-8	5/23/2012 4:46:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-008A	SB-H-6-8	5/23/2012 4:46:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-009A	SB-H-8-10	5/23/2012 4:47:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-009A	SB-H-8-10	5/23/2012 4:47:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-010A	SB-H-10-12	5/23/2012 4:48:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-010A	SB-H-10-12	5/23/2012 4:48:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-011A	SB-H-14-16	5/23/2012 4:49:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205L58

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205L58-011A	SB-H-14-16	5/23/2012 4:49:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-012A	SB-H111-0-2	5/24/2012 10:38:00AM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-012A	SB-H111-0-2	5/24/2012 10:38:00AM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-013A	SB-H111-2-4	5/24/2012 10:39:00AM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-013A	SB-H111-2-4	5/24/2012 10:39:00AM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-014A	SB-H111-4-6	5/24/2012 10:40:00AM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-014A	SB-H111-4-6	5/24/2012 10:40:00AM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-015A	SB-H111-6-8	5/24/2012 10:41:00AM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-015A	SB-H111-6-8	5/24/2012 10:41:00AM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-016A	SB-W101-0-2	5/24/2012 12:56:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-016A	SB-W101-0-2	5/24/2012 12:56:00PM	Soil	PERCENT MOISTURE			05/29/2012
1205L58-017A	SB-W101-2-4	5/24/2012 12:57:00PM	Soil	Metals by ICP/MS		05/29/2012	05/31/2012
1205L58-017A	SB-W101-2-4	5/24/2012 12:57:00PM	Soil	PERCENT MOISTURE			05/29/2012

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205L58

ANALYTICAL QC SUMMARY REPORT

BatchID: 161941

Sample ID: **MB-161941** Client ID: Units: **ug/Kg** Prep Date: **05/29/2012** Run No: **222417**
SampleType: **MBLK** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **05/31/2012** Seq No: **4652633**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDD	BRL	3.3	0	0	0	0	0	0	0	0	
4,4´-DDE	BRL	3.3	0	0	0	0	0	0	0	0	
4,4´-DDT	BRL	3.3	0	0	0	0	0	0	0	0	
alpha-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
alpha-Chlordane	BRL	1.7	0	0	0	0	0	0	0	0	
beta-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
delta-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
Dieldrin	BRL	3.3	0	0	0	0	0	0	0	0	
gamma-BHC	BRL	1.7	0	0	0	0	0	0	0	0	
gamma-Chlordane	BRL	1.7	0	0	0	0	0	0	0	0	
Heptachlor	BRL	1.7	0	0	0	0	0	0	0	0	
Methoxychlor	BRL	17	0	0	0	0	0	0	0	0	
Toxaphene	BRL	170	0	0	0	0	0	0	0	0	
Surr: Decachlorobiphenyl	17.90	0	16.67	0	107	26.2	127	0	0	0	
Surr: Tetrachloro-m-xylene	21.09	0	16.67	0	127	26.9	121	0	0	0	S

Sample ID: **LCS-161941** Client ID: Units: **ug/Kg** Prep Date: **05/29/2012** Run No: **222417**
SampleType: **LCS** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **05/31/2012** Seq No: **4652635**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	38.41	3.3	33.33	0	115	44.5	138	0	0	0	
Dieldrin	37.48	3.3	33.33	0	112	47.5	132	0	0	0	
gamma-BHC	36.06	1.7	33.33	0	108	40.8	130	0	0	0	
Heptachlor	33.96	1.7	33.33	0	102	38.8	134	0	0	0	
Surr: Decachlorobiphenyl	13.62	0	16.67	0	81.7	26.2	127	0	0	0	
Surr: Tetrachloro-m-xylene	12.65	0	16.67	0	75.9	26.9	121	0	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205L58

ANALYTICAL QC SUMMARY REPORT

BatchID: 161941

Sample ID: **1205I87-011AMS** Client ID: Units: **ug/Kg-dry** Prep Date: **05/29/2012** Run No: **222481**
SampleType: **MS** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **06/02/2012** Seq No: **4654302**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	44.28	3.6	36.39	0.007930	122	25.1	151	0	0	0	
Dieldrin	39.12	3.6	36.39	0.004081	108	33.5	137	0	0	0	
gamma-BHC	36.02	1.8	36.39	0	99	35.8	129	0	0	0	
Heptachlor	34.61	1.8	36.39	0.0007825	95.1	30.8	131	0	0	0	
Surr: Decachlorobiphenyl	8.694	0	18.2	0	47.8	26.2	127	0	0	0	
Surr: Tetrachloro-m-xylene	13.08	0	18.2	0	71.9	26.9	121	0	0	0	

Sample ID: **1205I87-011AMSD** Client ID: Units: **ug/Kg-dry** Prep Date: **05/29/2012** Run No: **222481**
SampleType: **MSD** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **161941** Analysis Date: **06/02/2012** Seq No: **4654303**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	45.22	3.6	36.42	0.007930	124	25.1	151	44.28	2.1	37.7	
Dieldrin	38.33	3.6	36.42	0.004081	105	33.5	137	39.12	2.06	30.8	
gamma-BHC	34.17	1.8	36.42	0	93.8	35.8	129	36.02	5.26	31.3	
Heptachlor	33.14	1.8	36.42	0.0007825	91	30.8	131	34.61	4.35	30.8	
Surr: Decachlorobiphenyl	8.326	0	18.22	0	45.7	26.2	127	8.694	0	0	
Surr: Tetrachloro-m-xylene	12.70	0	18.22	0	69.7	26.9	121	13.08	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205L58

ANALYTICAL QC SUMMARY REPORT

BatchID: **162011**

Sample ID: **MB-162011** Client ID: Units: **mg/Kg** Prep Date: **05/29/2012** Run No: **222282**
SampleType: **MBLK** TestCode: **Metals by ICP/MS SW6020A** BatchID: **162011** Analysis Date: **05/31/2012** Seq No: **4649465**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	7.50	0	0	0	0	0	0	0	0	
Copper	BRL	0.10	0	0	0	0	0	0	0	0	
Lead	BRL	0.05	0	0	0	0	0	0	0	0	
Zinc	BRL	0.50	0	0	0	0	0	0	0	0	

Sample ID: **LCS-162011** Client ID: Units: **mg/Kg** Prep Date: **05/29/2012** Run No: **222282**
SampleType: **LCS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **162011** Analysis Date: **05/31/2012** Seq No: **4649455**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	7.50	5	0	96.7	80	120	0	0	0	
Copper	5.200	0.10	5	0	104	80	120	0	0	0	
Lead	5.660	0.05	5	0.04060	112	80	120	0	0	0	
Zinc	4.932	0.50	5	0.06325	97.4	80	120	0	0	0	

Sample ID: **1205L58-007AMS** Client ID: **SB-H-3-5** Units: **mg/Kg-dry** Prep Date: **05/29/2012** Run No: **222282**
SampleType: **MS** TestCode: **Metals by ICP/MS SW6020A** BatchID: **162011** Analysis Date: **05/31/2012** Seq No: **4649479**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	259.3	82.3	5.484	255.5	69.4	75	125	0	0	0	S
Copper	504.7	1.10	5.484	354.2	2740	75	125	0	0	0	S
Lead	4696	0.55	5.484	3555	20800	75	125	0	0	0	S
Zinc	517.6	5.48	5.484	409.0	1980	75	125	0	0	0	S

Sample ID: **1205L58-007AMSD** Client ID: **SB-H-3-5** Units: **mg/Kg-dry** Prep Date: **05/29/2012** Run No: **222282**
SampleType: **MSD** TestCode: **Metals by ICP/MS SW6020A** BatchID: **162011** Analysis Date: **05/31/2012** Seq No: **4649485**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	338.4	82.1	5.472	255.5	1510	75	125	259.3	26.4	20	SR

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205L58

ANALYTICAL QC SUMMARY REPORT

BatchID: **162011**

Sample ID: **1205L58-007AMSD** Client ID: **SB-H-3-5** Units: **mg/Kg-dry** Prep Date: **05/29/2012** Run No: **222282**
SampleType: **MSD** TestCode: **Metals by ICP/MS SW6020A** BatchID: **162011** Analysis Date: **05/31/2012** Seq No: **4649485**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	428.5	1.09	5.472	354.2	1360	75	125	504.7	16.3	20	S
Lead	4708	0.55	5.472	3555	21100	75	125	4696	0.261	20	S
Zinc	566.9	5.47	5.472	409.0	2890	75	125	517.6	9.08	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 24, 2012

Rhonda Quinn
AMEC E&I, Inc.
3200 Town Point Dr.
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1207A30

Analytical Environmental Services, Inc. received 9 samples on May 17, 2012 12:00 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

3785 PRESIDENTIAL PARKWAY • ATLANTA, GEORGIA 30340 • TEL: (770) 457-8177 • FAX: (770)457-8188

1201A30 ~~1205F79~~

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: _____

Date: 5-14-12 Page 1 of 3

COMPANY: AMEC-E&I

ADDRESS: 3200 Town Point Dr. Ste. 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeff Moore

ANALYSIS REQUESTED: Copper, Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes)	REMARKS	No # of Containers
1	TW-1-0-2	5-14-12	1035	X		SO	1		
2	TW-1-8-10	5-14-12	1038	X		SO	1		
3	TW-1-10-12	5-14-12	1042	X		SO	1		
4	TW-2-0-2	5-14-12	1155	X		SO	1		
5	TW-2-10-12	5-14-12	1159	X		SO	1		
6	TW-2-16-18	5-14-12	1201	X		SO	1		
7	TW-3-0-2	5-14-12	1255	X		SO	1		
8	TW-3-10-12	5-14-12	1259	X		SO	1		
9	TW-3-18-20	5-14-12	1:01	X		SO	1		
10	TW-4-0-2	5-14-12	1:52	X		SO	1		
11	TW-4-10-12	5-14-12	1:59	X		SO	1		
12	TW-4-20-22	5-14-12	2:03	X		SO	1		
13	TW-5-0-2	5-14-12	2:51	X		SO	1		
14	TW-5-10-12	5-14-12	2:56	X		SO	1		

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeff Moore	5-16-12 5:45	1: [signature]	5/17/12 1200
2:		2:	
3:		3:	

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: _____ PO#: _____

RECEIPT
Total # of Containers

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY 1207A30

Work Order: ~~1205F79~~

Date: 5-15-12 Page 2 of 3

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE:

ANALYSIS REQUESTED: Copper, Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes)	REMARKS	No # of Containers
1	TW-5-16-18	5-14-12	3:00	X		SO	1		
2	TW-6-0-2	5-15-12	9:04	X		SO	1		
3	TW-6-10-12	5-15-12	9:22	X		SO	1		
4	TW-6-18-20	5-15-12	9:31	X		SO	1		
5	TW-7-0-2	5-15-12	10:38	X		SO	1		
6	TW-7-10-12	5-15-12	10:43	X		SO	1		
7	TW-8-0-2	5-15-12	11:20	X		SO	1		
8	TW-8-10-12	5-15-12	11:24	X		SO	1		
9	TW-9-0-2	5-15-12	3:16	X		SO	1		
10	TW-9-10-12	5-15-12	3:20	X		SO	1		
11	TW-9-15-17	5-15-12	3:25	X		SO	1		
12	TW-10-0-2	5-15-12	4:02	X		SO	1		
13	TW-10-10-12	5-15-12	4:07	X		SO	1		
14	TW-10-14-16	5-15-12	4:10	X		SO	1		

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	5-16-12 5:45	1:	5/17/12 1200
2:		2:	
3:		3:	

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- ☒ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY 1207A30

Work Order: ~~1205F79~~

Date: 5-16-12 Page 3 of 3

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeffrey Moore

ANALYSIS REQUESTED: Copper + Zinc

PRESERVATION (See codes): S_o

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	S_o	REMARKS	No # of Containers
1	TW-11-0-2	5-16-12	8:46	X		SO	1		
2	TW-11-14-16	5-16-12	8:50	X		SO	1		
3	TW-11-26-28	5-16-12	8:56	X		SO	1		
4	TW-12-0-2	5-16-12	9:28	X		SO	1		
5	TW-12-12-14	5-16-12	9:31						
6	TW-12-23-25	5-16-12	9:36						
7									
8									
9									
10									
11									
12									
13									
14									

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffrey Moore	5-16-12 5:45	1: [illegible]	5/17/12 1100
2:		2:	
3:		3:	

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

1207A30

Work Order: 1205 F87

Composites

Date: 5-21/22-12 Page 1 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeffrey Moore

ANALYSIS REQUESTED

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Pesticides, Lead, Arsenic, Copper, Zinc	Pesticides 2,4-Dinitrotoluene	Arsenic, Lead Copper, Zinc	Pesticides	Arsenic, Pesticides Copper, Zinc									REMARKS	No # of Containers
							4°	4°													
1	SB-E-0-2	5-21-12	10:25		✓	SO		1													1
2	SB-E-2-4	5-21-12	10:25		✓	SO		1													1
3	SB-F-0-2	5-21-12	1:30		✓	SO	1														1
4	SB-F-2-4	5-21-12	1:30		✓	SO	1														1
5	SB-G-0-2	5-21-12	3:30		✓	SO			1												1
6	SB-G-2-4	5-21-12	3:30		✓	SO			1												1
7	SB-G-4-6	5-21-12	3:30		✓	SO			1												1
8	SB-SS2-0-2	5-22-12	9:37		✓	SO				1											1
9	SB-SS2-2-4	5-22-12	9:37		✓	SO				1											1
10	SB-SS3-0-2	5-22-12	10:19		✓	SO				1											1
11	SB-SS3-2-4	5-22-12	10:19		✓	SO				1											1
12	SB-A-0-2	5-22-12	4:32		✓	SO					1										1
13	SB-A-3-5	5-22-12	4:33		✓	SO					1										1
14	SB-A-6-8	5-22-12	4:34		✓	SO					1										1

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffrey Moore	5-22-12 6:30	1: [signature]	5/23/12 10:25
2:		2:	
3:		3:	

PROJECT INFORMATION

PROJECT NAME: BFEL-Atlanta

PROJECT #: 6122080154

SITE ADDRESS: Atlanta, GA

SEND REPORT TO: Rhonda Quinn

INVOICE TO: (IF DIFFERENT FROM ABOVE)

QUOTE #: PO#:

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD

OUT / / VIA:

IN / / VIA:

CLIENT FedEx UPS MAIL COURIER

GREYHOUND OTHER

RECEIPT

Total # of Containers 18 total for analysis

Turnaround Time Requested

- ⊘ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):

E-mail? Y / N; Fax? Y / N

DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

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PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

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ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY 1207A30

Work Order: ~~1205E87~~

Composites

Date: 5-22-12 Page 2 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE:

ANALYSIS REQUESTED: Arsenic, Pesticides, Copper, Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes) 4°	REMARKS	No # of Containers
1	SB-A-8-10	5-22-12	4:35		✓	SO	1		1
2	SB-A-10-12	5-22-12	4:36		✓	SO	1		1
3	SB-A-12-14	5-22-12	4:37		✓	SO	1		1
4	SB-A-14-16	5-22-12	4:38		✓	SO	1		1
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	5-22-12 6:30	1:	5/23/12 10:20
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers 18 Total For Analysis

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other

STATE PROGRAM (if any):
E-mail? (Y) N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

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PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

1207A30

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 105258

Composites

Date: 5-24-12 Page 1 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100, Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE: Jeff Moore

ANALYSIS REQUESTED: Arsenic, Pesticides, Copper, Zinc; Arsenic, Lead, Copper, Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes) 4°		REMARKS	No # of Containers
1	SB-B-0-2	5-23-12	12:36		✓	SO	1	X		1
2	SB-B-3-5	5-23-12	12:37		✓	SO	1	X		1
3	SB-B-6-8	5-23-12	12:38		✓	SO	1	X		1
4	SB-B-8-10	5-23-12	12:39		✓	SO	1	X		1
5	SB-B-10-12	5-23-12	12:40		✓	SO	1	X		1
6	SB-H-0-2	5-23-12	1644		✓	SO	1	X		1
7	SB-H-3-5	5-23-12	1645		✓	SO	1	X		1
8	SB-H-6-8	5-23-12	1646		✓	SO	1	X		1
9	SB-H-8-10	5-23-12	1647		✓	SO	1	X		1
10	SB-H-10-12	5-23-12	1648		✓	SO	1	X		1
11	SB-H-14-16	5-23-12	1649		✓	SO	1	X		1
12	SB-HIII-0-2	5-24-12	10:38		✓	SO	1		JAM 5-24-12	1
13	SB-HIII-2-4	5-24-12	10:39		✓	SO	1			1
14	SB-HIII-4-6	5-24-12	10:40		✓	SO	1			1

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeff Moore	5-24-12 2:40	1: [signature]	5/24/12 2:45
2:		2:	
3:		3:	

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers 17 Total Run

Turnaround Time Request
- ⊗ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

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White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY 1207A30

Work Order: ~~1207596~~

Composites

Date: 5-24-12 Page 2 of 2

COMPANY: AMEC E&I
ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144
PHONE: 770-421-3400
FAX: 770-421-3486
SAMPLED BY: Jeff Moore Terrell Parker
SIGNATURE: Jeffery L. Moore

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

ANALYSIS REQUESTED: Arsenic, Lead, Copper, Zinc; Arsenic, Copper, Zinc

PRESERVATION (See codes): 4°

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Arsenic, Lead, Copper, Zinc	Arsenic, Copper, Zinc	REMARKS	No # of Containers
1	SB-H111-6-8	5-24-12	10:41		✓	SO	1			1
2	SB-W101-0-2	5-24-12	12:56		✓	SO		1		1
3	SB-W101-2-4	5-24-12	12:57		✓	SO		1		1
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffery L. Moore	5-24-12 2:40	1: [illegible]	5/24/12 2:45
2:		2:	
3:		3:	

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 17 Total Run

Turnaround Time Request
- ☒ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? (Y) / N: Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
(CLIENT) FedEx UPS MAIL COURIER
GREYHOUND OTHER

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PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab ID: 1207A30

Case Narrative

Per email request from Rhonda Quinn on 7/16/12, the following samples were analyzed and reported for Copper and Zinc by SPLP method 1312 and SW6020.

Client Sample Identification	Previous Laboratory Identification
TW-7-10-12	1205F79-020
TW-6-18-20	1205F79-018
SB-H-0-2	1205L58-006
TW-10-14-16	1205F79-028
TW-5-10-12	1205F79-014
SB-B-8-10	1205F58-004
SB-G-2-4	1205I87-006
SB-A-3-5	1205I87-013
SB-H-10-12	1205L58-010

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-7-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 10:43:00 AM
Lab ID:	1207A30-001	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.0213	0.00200		mg/L	163995	1	07/23/2012 15:06	JY
Zinc	BRL	0.0100		mg/L	163995	1	07/23/2012 15:06	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-6-18-20
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 9:31:00 AM
Lab ID:	1207A30-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.0126	0.00200		mg/L	163995	1	07/23/2012 15:36	JY
Zinc	1.63	0.0100		mg/L	163995	1	07/23/2012 15:36	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-0-2
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:44:00 PM
Lab ID:	1207A30-003	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.0112	0.00200		mg/L	163995	1	07/23/2012 15:43	JY
Zinc	0.0134	0.0100		mg/L	163995	1	07/23/2012 15:43	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-10-14-16
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 4:10:00 PM
Lab ID:	1207A30-004	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.148	0.00200		mg/L	163995	1	07/23/2012 15:49	JY
Zinc	0.793	0.0100		mg/L	163995	1	07/23/2012 15:49	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-5-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 2:56:00 PM
Lab ID:	1207A30-005	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.362	0.00200		mg/L	163995	1	07/23/2012 16:13	JY
Zinc	0.159	0.0100		mg/L	163995	1	07/23/2012 16:13	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-B-8-10
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 12:39:00 PM
Lab ID:	1207A30-006	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.0517	0.00200		mg/L	163995	1	07/23/2012 16:19	JY
Zinc	0.998	0.0100		mg/L	163995	1	07/23/2012 16:19	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-G-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 3:30:00 PM
Lab ID:	1207A30-007	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.0254	0.00200		mg/L	163995	1	07/23/2012 16:25	JY
Zinc	0.646	0.0100		mg/L	163995	1	07/23/2012 16:25	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-A-3-5
Project Name:	BFEL-Atlanta	**Collection Date:**	5/22/2012 4:33:00 PM
Lab ID:	1207A30-008	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	BRL	0.00200		mg/L	163995	1	07/23/2012 16:31	JY
Zinc	0.0789	0.0100		mg/L	163995	1	07/23/2012 16:31	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 24-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:48:00 PM
Lab ID:	1207A30-009	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Copper	0.110	0.00200		mg/L	163995	1	07/23/2012 16:37	JY
Zinc	7.22	0.0100		mg/L	163995	1	07/23/2012 16:37	JY

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

1207A30 RN 7/17/12
~~1205E79~~ per PM

Client Amec - E & I Work Order Number _____

Checklist completed by PLT 5/18/12
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.3° Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist_

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

RA 7/17/12 Per PM 1207A30

Client AMEC Work Order Number ~~1205187~~

Checklist completed by [signature] 05/23/2012
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.5 Cooler #2 4.3 Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Anec

Work Order Number ~~1205L58~~ 1207A30

Checklist completed by [signature] 05/25/2012
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.7 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 24-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1207A30

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1207A30-001A	TW-7-10-12	5/15/2012 10:43:00AM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-002A	TW-6-18-20	5/15/2012 9:31:00AM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-003A	SB-H-0-2	5/23/2012 4:44:00PM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-004A	TW-10-14-16	5/15/2012 4:10:00PM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-005A	TW-5-10-12	5/14/2012 2:56:00PM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-006A	SB-B-8-10	5/23/2012 12:39:00PM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-007A	SB-G-2-4	5/21/2012 3:30:00PM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-008A	SB-A-3-5	5/22/2012 4:33:00PM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012
1207A30-009A	SB-H-10-12	5/23/2012 4:48:00PM	Soil	Total Metals by ICP/MS		07/18/2012	07/23/2012

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1207A30

ANALYTICAL QC SUMMARY REPORT

BatchID: **163995**

Sample ID: **MB-163995** Client ID: Units: **mg/L** Prep Date: **07/18/2012** Run No: **225567**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **163995** Analysis Date: **07/23/2012** Seq No: **4721169**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	BRL	0.00200	0	0	0	0	0	0	0	0	
Zinc	BRL	0.0100	0	0	0	0	0	0	0	0	

Sample ID: **LCS-163995** Client ID: Units: **mg/L** Prep Date: **07/18/2012** Run No: **225567**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **163995** Analysis Date: **07/23/2012** Seq No: **4721167**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.1145	0.00200	0.1	0.0002400	114	80	120	0	0	0	
Zinc	0.1148	0.0100	0.1	0.003667	111	80	120	0	0	0	

Sample ID: **1207A30-001AMS** Client ID: **TW-7-10-12** Units: **mg/L** Prep Date: **07/18/2012** Run No: **225567**
SampleType: **MS** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **163995** Analysis Date: **07/23/2012** Seq No: **4721172**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.1298	0.00200	0.1	0.02130	108	75	125	0	0	0	
Zinc	0.1192	0.0100	0.1	0.007409	112	75	125	0	0	0	

Sample ID: **1207A30-001AMSD** Client ID: **TW-7-10-12** Units: **mg/L** Prep Date: **07/18/2012** Run No: **225567**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **163995** Analysis Date: **07/23/2012** Seq No: **4721173**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.1283	0.00200	0.1	0.02130	107	75	125	0.1298	1.16	20	
Zinc	0.1392	0.0100	0.1	0.007409	132	75	125	0.1192	15.5	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

August 02, 2012

Rhonda Quinn
AMEC E&I, Inc.
1075 Big Shanty Road, NW, Suite 100
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1207I07

Analytical Environmental Services, Inc. received 4 samples on May 7, 2012 12:00 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: ~~1205F79~~ 1207107

Date: 5-14-12 Page 1 of 3

COMPANY: AMEC-E&I

ADDRESS: 3200 Town Point Dr. Ste. 100, Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeff Moore

ANALYSIS REQUESTED: Copper, Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes)	REMARKS	No # of Containers
1	TW-1-0-2	5-14-12	1035	X		SO	1		
2	TW-1-8-10	5-14-12	1038	X		SO	1		
3	TW-1-10-12	5-14-12	1042	X		SO	1		
4	TW-2-0-2	5-14-12	1155	X		SO	1		
5	TW-2-10-12	5-14-12	1159	X		SO	1		
6	TW-2-16-18	5-14-12	1201	X		SO	1		
7	TW-3-0-2	5-14-12	1255	X		SO	1		
8	TW-3-10-12	5-14-12	1259	X		SO	1		
9	TW-3-18-20	5-14-12	1:01	X		SO	1		
10	TW-4-0-2	5-14-12	1:52	X		SO	1		
11	TW-4-10-12	5-14-12	1:59	X		SO	1		
12	TW-4-20-22	5-14-12	2:03	X		SO	1		
13	TW-5-0-2	5-14-12	2:51	X		SO	1		
14	TW-5-10-12	5-14-12	2:56	X		SO	1		

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeff Moore	5-16-12 5:45	1: [illegible]	5/17/12 1200
2:		2:	
3:		3:	

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: ~~1205F79~~ ~~1207I07~~ 7/27

Date: 5-15-12 Page 2 of 3

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: [signature]

ANALYSIS REQUESTED: Copper Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	PRESERVATION (See codes)	REMARKS	No # of Containers
1	TW-5-16-18	5-14-12	3:00	X		SO	I		
2	TW-6-0-2	5-15-12	9:04	X		SO	I		
3	TW-6-10-12	5-15-12	9:22	X		SO	I		
4	TW-6-18-20	5-15-12	9:31	X		SO	I		
5	TW-7-0-2	5-15-12	10:38	X		SO	I		
6	TW-7-10-12	5-15-12	10:43	X		SO	I		
7	TW-8-0-2	5-15-12	11:20	X		SO	I		
8	TW-8-10-12	5-15-12	11:24	X		SO	I		
9	TW-9-0-2	5-15-12	3:16	X		SO	I		
10	TW-9-10-12	5-15-12	3:20	X		SO	I		
11	TW-9-15-17	5-15-12	3:25	X		SO	I		
12	TW-10-0-2	5-15-12	4:02	X		SO	I		
13	TW-10-10-12	5-15-12	4:07	X		SO	I		
14	TW-10-14-16	5-15-12	4:10	X		SO	I		

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	5-16-12 5:45	1: [signature]	5/17/12 12:00
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- ⊗ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: ~~1205F79~~ NJ 7/27 T207107

Date: 5-16-12 Page 3 of 3

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeffrey Moore

ANALYSIS REQUESTED: Copper & Zinc

PRESERVATION (See codes): 5°

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Copper & Zinc	REMARKS	No # of Containers
1	TW-11-0-2	5-16-12	8:46	X		SO	1		
2	TW-11-14-16	5-16-12	8:50	X		SO	1		
3	TW-11-26-28	5-16-12	8:56	X		SO	1		
4	TW-12-0-2	5-16-12	9:28	X		SO	1		
5	TW-12-12-14	5-16-12	9:31						
6	TW-12-23-25	5-16-12	9:36						
7									
8									
9									
10									
11									
12									
13									
14									

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffrey Moore	5-16-12 5:45	1: [illegible]	5/17/12 11:00
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1207I07 ~~1205F81~~ NJ 7/27

Composites

Date: 5-21/22-12 Page 1 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore

SIGNATURE: Jeffrey Moore

ANALYSIS REQUESTED: Pesticides, Lead, Arsenic; Copper, Zinc; Pesticides; 2,4-Dinitrotoluene; Arsenic, Lead; Copper, Zinc; Pesticides; Arsenic, Pesticides; Copper, Zinc

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Pesticides, Lead, Arsenic (4°)	Copper, Zinc (4°)	Pesticides 2,4-Dinitrotoluene	Arsenic, Lead	Copper, Zinc	Pesticides	Arsenic, Pesticides	Copper, Zinc	REMARKS	No # of Containers
1	SB-E-0-2	5-21-12	10:25		✓	SO		1								1
2	SB-E-2-4	5-21-12	10:25		✓	SO		1								1
3	SB-F-0-2	5-21-12	1:30		✓	SO	1									1
4	SB-F-2-4	5-21-12	1:30		✓	SO	1									1
5	SB-G-0-2	5-21-12	3:30		✓	SO			1							1
6	SB-G-2-4	5-21-12	3:30		✓	SO			1							1
7	SB-G-4-6	5-21-12	3:30		✓	SO			1							1
8	SB-SS2-0-2	5-22-12	9:37		✓	SO				1						1
9	SB-SS2-2-4	5-22-12	9:37		✓	SO				1						1
10	SB-SS3-0-2	5-22-12	10:19		✓	SO				1						1
11	SB-SS3-2-4	5-22-12	10:19		✓	SO				1						1
12	SB-A-0-2	5-22-12	4:32		✓	SO					1					1
13	SB-A-3-5	5-22-12	4:33		✓	SO					1					1
14	SB-A-6-8	5-22-12	4:34		✓	SO					1					1

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffrey Moore	5-22-12 6:30	1: [signature]	5/23/12 10:25
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT (FedEx) UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 18 total For Analysis

Turnaround Time Request
- ⊘ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? ⊘/N; Fax? Y/N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1207I07 ~~1205I87~~ 3/27

Composites

Date: 5-22-12 Page 2 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE: [signature]

ANALYSIS REQUESTED: Arsenic, Pesticides, Copper, Zinc

PRESERVATION (See codes): H

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	No # of Containers	REMARKS
1	SB-A-8-10	5-22-12	4:35		✓	SO	1	1
2	SB-A-10-12	5-22-12	4:36		✓	SO	1	1
3	SB-A-12-14	5-22-12	4:37		✓	SO	1	1
4	SB-A-14-16	5-22-12	4:38		✓	SO	1	1
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY / DATE/TIME
1: [signature] 5-22-12 6:30
2:
3:

RECEIVED BY / DATE/TIME
1: [signature] 5/23/12 10:20
2:
3:

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers 18 total For Analysis

Turnaround Time Request
- (X) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? (X) N; Fax? Y / N
DATA PACKAGE: I II III IV

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White Copy - Original; Yellow Copy - Client

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3785 Presidential Parkway, Atlanta GA 30340-3704
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CHAIN OF CUSTODY

Work Order: 1207I07 ~~1205258~~ NJ 9127

Composites

Date: 5-24-12 Page 1 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr, Ste 100, Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE: [signature]

ANALYSIS REQUESTED: Arsenic, Pesticides, Copper, Zinc; Arsenic, Lead, copper, Zinc

PRESERVATION (See codes): 4°

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Arsenic, Pesticides, Copper, Zinc	Arsenic, Lead, copper, Zinc	No # of Containers	REMARKS
1	SB-B-0-2	5-23-12	12:36		✓	SO	1		1	
2	SB-B-3-5	5-23-12	12:37		✓	SO	1		1	
3	SB-B-6-8	5-23-12	12:38		✓	SO	1		1	
4	SB-B-8-10	5-23-12	12:39		✓	SO	1		1	
5	SB-B-10-12	5-23-12	12:40		✓	SO	1		1	
6	SB-H-0-2	5-23-12	1644		✓	SO		1	1	
7	SB-H-3-5	5-23-12	1645		✓	SO		1	1	
8	SB-H-6-8	5-23-12	1646		✓	SO		1	1	
9	SB-H-8-10	5-23-12	1647		✓	SO		1	1	
10	SB-H-10-12	5-23-12	1648		✓	SO		1	1	
11	SB-H-14-16	5-23-12	1649		✓	SO		1	1	
12	SB-H111-0-2	5-24-12	10:38		✓	SO		1	1	JAM 5-24-12
13	SB-H111-2-4	5-24-12	10:39		✓	SO		1	1	
14	SB-H111-4-6	5-24-12	10:40		✓	SO		1	1	

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: [signature]	5-24-12 2:40	1: [signature]	5/24/12
2:		2:	2:45
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#:_____

RECEIPT
Total # of Containers 17 Total Run

Turnaround Time Request
(X) Standard 5 Business Days
( ) 2 Business Day Rush
( ) Next Business Day Rush
( ) Same Day Rush (auth req.)
( ) Other _____

STATE PROGRAM (if any): _____
E-mail? (Y) / N; Fax? Y / N
DATA PACKAGE: I II III IV

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3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1207I07 ~~1205L58~~ DJ 7/27

Composites

Date: 5-24-12 Page 2 of 2

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore Terrell Parker

SIGNATURE: Jeffery L. Moore

ANALYSIS REQUESTED: Arsenic, Lead, Copper, Zinc; Arsenic, Copper, Zinc

PRESERVATION (See codes): 4°

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Arsenic, Lead, Copper, Zinc	Arsenic, Copper, Zinc	REMARKS	No # of Containers
1	SB-H111-6-8	5-24-12	10:41		✓	SO	1			1
2	SB-W101-0-2	5-24-12	12:56		✓	SO		1		1
3	SB-W101-2-4	5-24-12	12:57		✓	SO		1		1
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1: Jeffery L. Moore	5-24-12 2:40	1: [illegible]	5/24/12 2:45
2:		2:	
3:		3:	

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 17 Total Run

Turnaround Time Request
- ☒ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

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PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

CLIENT: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1207I07

CASE NARRATIVE

pH Analysis by Method SW9045D:

Samples for pH analysis by Method SW9045D were received and analyzed outside holding time requirement of "immediate or 15 minutes".

The laboratory analyzed and reported the following samples for pH by method SW9045, per Rhonda Quinn on 7/27/12 at 3:28pm.

Client Identification	Laboratory ID
TW-6-18’-20’	1207I07-018A
TW-5-10’-12’	1207I07-014A
SB-G-2’-4’	1207I07-040A
SB-H-10’-12’	1207I07-062A

Analytical Environmental Services, Inc

Date: 1-Aug-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-5-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/14/2012 2:56:00 PM
Lab ID:	1207I07-014	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**			
pH	4.36	0.01	H	pH Units	164542	1	07/31/2012 10:00	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 1-Aug-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-6-18-20
Project Name:	BFEL-Atlanta	**Collection Date:**	5/15/2012 9:31:00 AM
Lab ID:	1207I07-018	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**			
pH	5.44	0.01	H	pH Units	164542	1	07/31/2012 10:00	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 1-Aug-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-G-2-4
Project Name:	BFEL-Atlanta	**Collection Date:**	5/21/2012 3:30:00 PM
Lab ID:	1207I07-040	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**			
pH	4.97	0.01	H	pH Units	164542	1	07/31/2012 10:00	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 1-Aug-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	SB-H-10-12
Project Name:	BFEL-Atlanta	**Collection Date:**	5/23/2012 4:48:00 PM
Lab ID:	1207I07-062	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Laboratory Hydrogen Ion (pH) SW9045D					**(SW9045D)**			
pH	4.78	0.01	H	pH Units	164542	1	07/31/2012 10:00	SR

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Amec - E & I

Work Order Number 1207I07 ~~1205F79~~ NJ 7/27

Checklist completed by PLT 5/18/12
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.3° Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client AMEC Work Order Number ~~1205I07~~ 1207I07 NJ 7/27

Checklist completed by [signature] 05/23/2012
Signature Date

Carrier name: FedEx ✓ UPS __ Courier __ Client __ US Mail __ Other _____

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shipping container/cooler?	Yes ✓	No __	Not Present __
Custody seals intact on sample bottles?	Yes __	No __	Not Present ✓
Container/Temp Blank temperature in compliance? (4°C±2)*	Yes ✓	No __	

Cooler #1 3.5 Cooler #2 4.3 Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present?	Yes ✓	No __
Chain of custody signed when relinquished and received?	Yes ✓	No __
Chain of custody agrees with sample labels?	Yes ✓	No __
Samples in proper container/bottle?	Yes ✓	No __
Sample containers intact?	Yes ✓	No __
Sufficient sample volume for indicated test?	Yes ✓	No __
All samples received within holding time?	Yes ✓	No __
Was TAT marked on the COC?	Yes ✓	No __
Proceed with Standard TAT as per project history?	Yes __	No __ Not Applicable ✓
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes __ No __
Water - pH acceptable upon receipt?	Yes __	No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Amec

Work Order Number ~~1205L58~~ 1207I07 NJ 7/27

Checklist completed by [signature] 05/29/2012
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition?	Yes ✓	No __	Not Present __
Custody seals intact on shipping container/cooler?	Yes __	No __	Not Present ✓
Custody seals intact on sample bottles?	Yes __	No __	Not Present ✓
Container/Temp Blank temperature in compliance? (4°C±2)*	Yes ✓	No __	

Cooler #1 3.7 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present?	Yes ✓	No __
Chain of custody signed when relinquished and received?	Yes ✓	No __
Chain of custody agrees with sample labels?	Yes ✓	No __
Samples in proper container/bottle?	Yes ✓	No __
Sample containers intact?	Yes ✓	No __
Sufficient sample volume for indicated test?	Yes ✓	No __
All samples received within holding time?	Yes ✓	No __
Was TAT marked on the COC?	Yes ✓	No __
Proceed with Standard TAT as per project history?	Yes __	No __ Not Applicable ✓
Water - VOA vials have zero headspace?	No VOA vials submitted ✓	Yes __ No __
Water - pH acceptable upon receipt?	Yes __	No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 2-Aug-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1207I07

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1207I07-014A	TW-5-10-12	5/14/2012 2:56:00PM	Soil	Laboratory Hydrogen Ion (pH)		07/31/2012	07/31/2012
1207I07-018A	TW-6-18-20	5/15/2012 9:31:00AM	Soil	Laboratory Hydrogen Ion (pH)		07/31/2012	07/31/2012
1207I07-040A	SB-G-2-4	5/21/2012 3:30:00PM	Soil	Laboratory Hydrogen Ion (pH)		07/31/2012	07/31/2012
1207I07-062A	SB-H-10-12	5/23/2012 4:48:00PM	Soil	Laboratory Hydrogen Ion (pH)		07/31/2012	07/31/2012

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1207I07

ANALYTICAL QC SUMMARY REPORT

BatchID: **164542**

Sample ID: **LCS-164542** Client ID: Units: **pH Units** Prep Date: **07/31/2012** Run No: **226047**
SampleType: **LCS** TestCode: **Laboratory Hydrogen Ion (pH) SW9045D** BatchID: **164542** Analysis Date: **07/31/2012** Seq No: **4731792**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.010	0.01	7	0	100	90	110	0	0	0	

Sample ID: **1207H58-001ADUP** Client ID: Units: **pH Units** Prep Date: **07/31/2012** Run No: **226047**
SampleType: **DUP** TestCode: **Laboratory Hydrogen Ion (pH) SW9045D** BatchID: **164542** Analysis Date: **07/31/2012** Seq No: **4731794**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
pH	7.220	0.01	0	0	0	0	0	7.320	1.38	10	H

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

GROUNDWATER

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 23, 2012

Rhonda Quinn
AMEC E&I, Inc.
3200 Town Point Dr.
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1205O69

Analytical Environmental Services, Inc. received 4 samples on May 31, 2012 2:10 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

Revision 7/23/2012

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1205069

Date: _____ Page 1 of _____

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore / Ferrell Parker / Daniel Howard

SIGNATURE: Jeff Moore

ANALYSIS REQUESTED: Organochlorine Pesticides; Total Arsenic, Lead, Copper, Zinc; Dissolved Arsenic, Lead, Copper, Zinc; Nitrate & Sulfate

PRESERVATION (See codes): 4°; N; 4°; 4°

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID (30 JAN-5-30-12)	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Organochlorine Pesticides	Total Arsenic, Lead, Copper, Zinc	Dissolved Arsenic, Lead, Copper, Zinc	Nitrate & Sulfate	REMARKS	No # of Containers
1	TW-1-052912	5-30-12	12:00	✓		GW	2	1	1	1	Lab Filter For	5
2	TW-2-052912	5-30-12	1:15	✓		GW	2	1	1	1	Dissolved Metals	5
3	TW-5-053012	5-30-12	4:40	✓		GW	2	1	1	1		5
4	TW-6-053012	5-30-12	4:36	✓		GW	2	1	1	1		5
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1:	5/31/12 08:15	1:	5-31-12 8:15
2:	5-31-12 11:55	2:	5-31-12 11:55
3:	5-31-12 14:10	3:	5/31/12 2:10

SPECIAL INSTRUCTIONS/COMMENTS: Please Analyze Nitrate 5/31/12. Filter diss. metals in lab.

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA: Lab
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: _____ PO#: _____

RECEIPT
Total # of Containers

Turnaround Time Request
- (●) Standard 5 Business Days
- ( ) 2 Business Day Rush
- ( ) Next Business Day Rush
- ( ) Same Day Rush (auth req.)
- ( ) Other _____

STATE PROGRAM (if any): _____
E-mail? (Y) N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab ID: 1205O69

Case Narrative

The report was revised to remove the Method Detection Limits (MDL) and to change the reporting units to mg/L per email instructions from Rhonda Quinn on 7/19/12.

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-1-053012
Project Name:	BFEL-Atlanta	**Collection Date:**	5/30/2012 12:00:00 PM
Lab ID:	1205O69-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162154	1	06/02/2012 12:10	JY
Copper	BRL	0.00200		mg/L	162154	1	06/02/2012 12:10	JY
Lead	BRL	0.00100		mg/L	162154	1	06/02/2012 12:10	JY
Zinc	0.178	0.0100		mg/L	162154	1	06/02/2012 12:10	JY
ION SCAN SW9056A								
Nitrate	BRL	0.25		mg/L	R222380	1	05/31/2012 15:00	GR
Sulfate	60	1.0		mg/L	R222380	1	05/31/2012 15:00	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 21:59	JY
Copper	BRL	0.00200		mg/L	162333	1	06/06/2012 21:59	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 21:59	JY
Zinc	0.180	0.0100		mg/L	162333	1	06/06/2012 21:59	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	0.00042	0.00010		mg/L	162330	1	06/07/2012 19:39	KD
4,4´-DDE	0.00050	0.00010		mg/L	162330	1	06/07/2012 19:39	KD
4,4´-DDT	0.00049	0.00010		mg/L	162330	1	06/07/2012 19:39	KD
alpha-BHC	0.0037	0.00050		mg/L	162330	10	06/08/2012 15:18	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 19:39	KD
beta-BHC	0.0087	0.00050		mg/L	162330	10	06/08/2012 15:18	KD
delta-BHC	0.00047	0.000050		mg/L	162330	1	06/07/2012 19:39	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 19:39	KD
gamma-BHC	0.00030	0.000050		mg/L	162330	1	06/07/2012 19:39	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 19:39	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 19:39	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 19:39	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 19:39	KD
Surr: Decachlorobiphenyl	49.8	16.4-114		%REC	162330	1	06/07/2012 19:39	KD
Surr: Tetrachloro-m-xylene	51.6	18.4-120		%REC	162330	1	06/07/2012 19:39	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-2-053012
Project Name:	BFEL-Atlanta	**Collection Date:**	5/30/2012 1:15:00 PM
Lab ID:	1205O69-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162154	1	06/02/2012 12:16	JY
Copper	BRL	0.00200		mg/L	162154	1	06/02/2012 12:16	JY
Lead	BRL	0.00100		mg/L	162154	1	06/02/2012 12:16	JY
Zinc	0.0109	0.0100		mg/L	162154	1	06/02/2012 12:16	JY
ION SCAN SW9056A								
Nitrate	4.3	0.25		mg/L	R222380	1	05/31/2012 15:15	GR
Sulfate	68	1.0		mg/L	R222380	1	05/31/2012 15:15	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 22:29	JY
Copper	BRL	0.00200		mg/L	162333	1	06/06/2012 22:29	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 22:29	JY
Zinc	BRL	0.0100		mg/L	162333	1	06/06/2012 22:29	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 19:50	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 19:50	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 19:50	KD
alpha-BHC	0.000070	0.000050		mg/L	162330	1	06/07/2012 19:50	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 19:50	KD
beta-BHC	0.00014	0.000050		mg/L	162330	1	06/07/2012 19:50	KD
delta-BHC	0.000057	0.000050		mg/L	162330	1	06/07/2012 19:50	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 19:50	KD
gamma-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 19:50	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 19:50	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 19:50	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 19:50	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 19:50	KD
Surr: Decachlorobiphenyl	50.1	16.4-114		%REC	162330	1	06/07/2012 19:50	KD
Surr: Tetrachloro-m-xylene	51.6	18.4-120		%REC	162330	1	06/07/2012 19:50	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-5-053012
Project Name:	BFEL-Atlanta	**Collection Date:**	5/30/2012 4:40:00 PM
Lab ID:	1205O69-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162154	1	06/02/2012 12:22	JY
Copper	0.865	0.00200		mg/L	162154	1	06/02/2012 12:22	JY
Lead	0.00292	0.00100		mg/L	162154	1	06/02/2012 12:22	JY
Zinc	13.7	0.0200		mg/L	162154	2	06/04/2012 12:14	JY
ION SCAN SW9056A								
Nitrate	30	2.5		mg/L	R222380	10	05/31/2012 16:58	GR
Sulfate	430	10		mg/L	R222380	10	05/31/2012 16:58	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 22:36	JY
Copper	0.751	0.00200		mg/L	162333	1	06/06/2012 22:36	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 22:36	JY
Zinc	8.60	0.0100		mg/L	162333	1	06/06/2012 22:36	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 20:01	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 20:01	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 20:01	KD
alpha-BHC	0.00021	0.000050		mg/L	162330	1	06/07/2012 20:01	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:01	KD
beta-BHC	0.00042	0.000050		mg/L	162330	1	06/07/2012 20:01	KD
delta-BHC	0.00026	0.000050		mg/L	162330	1	06/07/2012 20:01	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 20:01	KD
gamma-BHC	0.00023	0.000050		mg/L	162330	1	06/07/2012 20:01	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:01	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 20:01	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 20:01	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 20:01	KD
Surr: Decachlorobiphenyl	50.3	16.4-114		%REC	162330	1	06/07/2012 20:01	KD
Surr: Tetrachloro-m-xylene	49.9	18.4-120		%REC	162330	1	06/07/2012 20:01	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-6-053012
Project Name:	BFEL-Atlanta	**Collection Date:**	5/30/2012 4:36:00 PM
Lab ID:	1205O69-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162154	1	06/02/2012 12:51	JY
Copper	0.195	0.00200		mg/L	162154	1	06/02/2012 12:51	JY
Lead	BRL	0.00100		mg/L	162154	1	06/02/2012 12:51	JY
Zinc	0.790	0.0100		mg/L	162154	1	06/02/2012 12:51	JY
ION SCAN SW9056A								
Nitrate	74	5.0		mg/L	R222380	20	05/31/2012 17:13	GR
Sulfate	440	20		mg/L	R222380	20	05/31/2012 17:13	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 22:42	JY
Copper	0.163	0.00200		mg/L	162333	1	06/06/2012 22:42	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 22:42	JY
Zinc	0.788	0.0100		mg/L	162333	1	06/06/2012 22:42	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 20:12	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 20:12	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 20:12	KD
alpha-BHC	0.00013	0.000050		mg/L	162330	1	06/07/2012 20:12	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:12	KD
beta-BHC	0.0011	0.000050		mg/L	162330	1	06/07/2012 20:12	KD
delta-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 20:12	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 20:12	KD
gamma-BHC	0.000066	0.000050		mg/L	162330	1	06/07/2012 20:12	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:12	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 20:12	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 20:12	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 20:12	KD
Surr: Decachlorobiphenyl	42	16.4-114		%REC	162330	1	06/07/2012 20:12	KD
Surr: Tetrachloro-m-xylene	44.6	18.4-120		%REC	162330	1	06/07/2012 20:12	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client AMEC Work Order Number 1205069

Checklist completed by PT 5/31/12
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes ✓ No __ Not Present __

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1°C Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by PT

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1205O69

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1205O69-001A	TW-1-053012	5/30/2012 12:00:00PM	Groundwater	Total Metals by ICP/MS		06/01/2012	06/02/2012
1205O69-001B	TW-1-053012	5/30/2012 12:00:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1205O69-001C	TW-1-053012	5/30/2012 12:00:00PM	Groundwater	ION SCAN			05/31/2012
1205O69-001D	TW-1-053012	5/30/2012 12:00:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1205O69-001D	TW-1-053012	5/30/2012 12:00:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/08/2012
1205O69-002A	TW-2-053012	5/30/2012 1:15:00PM	Groundwater	Total Metals by ICP/MS		06/01/2012	06/02/2012
1205O69-002B	TW-2-053012	5/30/2012 1:15:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1205O69-002C	TW-2-053012	5/30/2012 1:15:00PM	Groundwater	ION SCAN			05/31/2012
1205O69-002D	TW-2-053012	5/30/2012 1:15:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1205O69-003A	TW-5-053012	5/30/2012 4:40:00PM	Groundwater	Total Metals by ICP/MS		06/01/2012	06/02/2012
1205O69-003A	TW-5-053012	5/30/2012 4:40:00PM	Groundwater	Total Metals by ICP/MS		06/01/2012	06/04/2012
1205O69-003B	TW-5-053012	5/30/2012 4:40:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1205O69-003C	TW-5-053012	5/30/2012 4:40:00PM	Groundwater	ION SCAN			05/31/2012
1205O69-003D	TW-5-053012	5/30/2012 4:40:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1205O69-004A	TW-6-053012	5/30/2012 4:36:00PM	Groundwater	Total Metals by ICP/MS		06/01/2012	06/02/2012
1205O69-004B	TW-6-053012	5/30/2012 4:36:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1205O69-004C	TW-6-053012	5/30/2012 4:36:00PM	Groundwater	ION SCAN			05/31/2012
1205O69-004D	TW-6-053012	5/30/2012 4:36:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205O69

ANALYTICAL QC SUMMARY REPORT

BatchID: 162154

Sample ID: **MB-162154** Client ID: Units: **mg/L** Prep Date: **05/31/2012** Run No: **222445**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162154** Analysis Date: **06/02/2012** Seq No: **4653464**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	0.00500	0	0	0	0	0	0	0	0	
Copper	BRL	0.00200	0	0	0	0	0	0	0	0	
Lead	BRL	0.00100	0	0	0	0	0	0	0	0	
Zinc	BRL	0.0100	0	0	0	0	0	0	0	0	

Sample ID: **LCS-162154** Client ID: Units: **mg/L** Prep Date: **05/31/2012** Run No: **222445**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162154** Analysis Date: **06/02/2012** Seq No: **4653463**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.1052	0.00500	0.1	0	105	80	120	0	0	0	
Copper	0.1076	0.00200	0.1	0	108	80	120	0	0	0	
Lead	0.1034	0.00100	0.1	0	103	80	120	0	0	0	
Zinc	0.1031	0.0100	0.1	0.001385	102	80	120	0	0	0	

Sample ID: **1205O35-001CMS** Client ID: Units: **mg/L** Prep Date: **05/31/2012** Run No: **222445**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162154** Analysis Date: **06/02/2012** Seq No: **4653466**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.03937	0.00500	0.1	0	39.4	75	125	0	0	0	S
Copper	0.1599	0.00200	0.1	0.07213	87.8	75	125	0	0	0	
Lead	0.1276	0.00100	0.1	0.02670	101	75	125	0	0	0	
Zinc	0.2692	0.0100	0.1	0.1850	84.2	75	125	0	0	0	

Sample ID: **1205O35-001CMSD** Client ID: Units: **mg/L** Prep Date: **05/31/2012** Run No: **222445**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162154** Analysis Date: **06/02/2012** Seq No: **4653467**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.03932	0.00500	0.1	0	39.3	75	125	0.03937	0.127	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205O69

ANALYTICAL QC SUMMARY REPORT

BatchID: **162154**

Sample ID: **1205O35-001CMSD** Client ID: Units: **mg/L** Prep Date: **05/31/2012** Run No: **222445**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162154** Analysis Date: **06/02/2012** Seq No: **4653467**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.1638	0.00200	0.1	0.07213	91.7	75	125	0.1599	2.41	20	
Lead	0.1294	0.00100	0.1	0.02670	103	75	125	0.1276	1.4	20	
Zinc	0.2721	0.0100	0.1	0.1850	87.1	75	125	0.2692	1.07	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205O69

ANALYTICAL QC SUMMARY REPORT

BatchID: 162330

Sample ID: **MB-162330** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MBLK** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661325**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDD	BRL	0.10	0	0	0	0	0	0	0	0	
4,4´-DDE	BRL	0.10	0	0	0	0	0	0	0	0	
4,4´-DDT	BRL	0.10	0	0	0	0	0	0	0	0	
alpha-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
alpha-Chlordane	BRL	0.050	0	0	0	0	0	0	0	0	
beta-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
delta-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
Dieldrin	BRL	0.10	0	0	0	0	0	0	0	0	
gamma-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
gamma-Chlordane	BRL	0.050	0	0	0	0	0	0	0	0	
Heptachlor	BRL	0.050	0	0	0	0	0	0	0	0	
Methoxychlor	BRL	0.50	0	0	0	0	0	0	0	0	
Toxaphene	BRL	5.0	0	0	0	0	0	0	0	0	
Surr: Decachlorobiphenyl	0.2618	0	0.5	0	52.4	16.4	114	0	0	0	
Surr: Tetrachloro-m-xylene	0.3004	0	0.5	0	60.1	18.4	120	0	0	0	

Sample ID: **1205O89-001EMS** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MS** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661338**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	0.8545	0.10	1	0	85.4	26.6	137	0	0	0	
Dieldrin	0.8525	0.10	1	0	85.2	38.5	135	0	0	0	
gamma-BHC	0.7701	0.050	1	0	77	36.8	137	0	0	0	
Heptachlor	0.7202	0.050	1	0	72	33.2	123	0	0	0	
Surr: Decachlorobiphenyl	0.3131	0	0.5	0	62.6	16.4	114	0	0	0	
Surr: Tetrachloro-m-xylene	0.2426	0	0.5	0	48.5	18.4	120	0	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205O69

ANALYTICAL QC SUMMARY REPORT

BatchID: 162330

Sample ID: **1205O89-001EMSD** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MSD** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661342**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	0.8062	0.10	1	0	80.6	26.6	137	0.8545	5.82	37.8	
Dieldrin	0.8428	0.10	1	0	84.3	38.5	135	0.8525	1.15	25.2	
gamma-BHC	0.8210	0.050	1	0	82.1	36.8	137	0.7701	6.4	36.5	
Heptachlor	0.7755	0.050	1	0	77.6	33.2	123	0.7202	7.39	40.2	
Surr: Decachlorobiphenyl	0.2981	0	0.5	0	59.6	16.4	114	0.3131	0	0	
Surr: Tetrachloro-m-xylene	0.2765	0	0.5	0	55.3	18.4	120	0.2426	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205O69

ANALYTICAL QC SUMMARY REPORT

BatchID: 162333

Sample ID: **MB-162333** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MBLK** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658616**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	0.00500	0	0	0	0	0	0	0	0	
Copper	BRL	0.00200	0	0	0	0	0	0	0	0	
Lead	BRL	0.00100	0	0	0	0	0	0	0	0	
Zinc	BRL	0.0100	0	0	0	0	0	0	0	0	

Sample ID: **LCS-162333** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **LCS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658613**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08971	0.00500	0.1	0	89.7	85	115	0	0	0	
Copper	0.08882	0.00200	0.1	0	88.8	85	115	0	0	0	
Lead	0.09428	0.00100	0.1	0	94.3	85	115	0	0	0	
Zinc	0.09392	0.0100	0.1	0	93.9	85	115	0	0	0	

Sample ID: **1205O69-001BMS** Client ID: **TW-1-053012** Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658619**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.09001	0.00500	0.1	0	90	70	130	0	0	0	
Copper	0.08618	0.00200	0.1	0.0002500	85.9	70	130	0	0	0	
Lead	0.09524	0.00100	0.1	0	95.2	70	130	0	0	0	
Zinc	0.2709	0.0100	0.1	0.1802	90.7	70	130	0	0	0	

Sample ID: **1205O69-001BMSD** Client ID: **TW-1-053012** Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658621**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08871	0.00500	0.1	0	88.7	70	130	0.09001	1.45	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205O69

ANALYTICAL QC SUMMARY REPORT

BatchID: 162333

Sample ID: **1205O69-001BMSD** Client ID: **TW-1-053012** Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658621**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.08493	0.00200	0.1	0.0002500	84.7	70	130	0.08618	1.46	20	
Lead	0.09456	0.00100	0.1	0	94.6	70	130	0.09524	0.717	20	
Zinc	0.2728	0.0100	0.1	0.1802	92.6	70	130	0.2709	0.699	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1205O69

ANALYTICAL QC SUMMARY REPORT

BatchID: R222380

Sample ID: **MB-R222380** Client ID: Units: **mg/L** Prep Date: Run No: **222380**
SampleType: **MBLK** TestCode: **ION SCAN SW9056A** BatchID: **R222380** Analysis Date: **05/31/2012** Seq No: **4651583**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	BRL	0.25	0	0	0	0	0	0	0	0	
Sulfate	BRL	1.0	0	0	0	0	0	0	0	0	

Sample ID: **LCS-R222380** Client ID: Units: **mg/L** Prep Date: Run No: **222380**
SampleType: **LCS** TestCode: **ION SCAN SW9056A** BatchID: **R222380** Analysis Date: **05/31/2012** Seq No: **4651582**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.175	0.25	5	0	103	90	110	0	0	0	
Sulfate	25.20	1.0	25	0	101	90	110	0	0	0	

Sample ID: **1205O20-001EMS** Client ID: Units: **mg/L** Prep Date: Run No: **222380**
SampleType: **MS** TestCode: **ION SCAN SW9056A** BatchID: **R222380** Analysis Date: **05/31/2012** Seq No: **4651587**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	4.897	0.25	5	0.03455	97.2	90	110	0	0	0	
Sulfate	26.66	1.0	25	2.127	98.1	90	110	0	0	0	

Sample ID: **1205O20-001EMSD** Client ID: Units: **mg/L** Prep Date: Run No: **222380**
SampleType: **MSD** TestCode: **ION SCAN SW9056A** BatchID: **R222380** Analysis Date: **05/31/2012** Seq No: **4651588**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	4.977	0.25	5	0.03455	98.8	90	110	4.897	1.62	20	
Sulfate	27.20	1.0	25	2.127	100	90	110	26.66	2.01	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 23, 2012

Rhonda Quinn
AMEC E&I, Inc.
3200 Town Point Dr.
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1206099

Analytical Environmental Services, Inc. received 1 samples on June 1, 2012 2:28 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

Revision 7/23/2012

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

Work Order: 1206099

Date: 6-1-12 Page 1 of 1

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste. 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore / Terrell Parker

SIGNATURE: Jeffrey L. Moore

ANALYSIS REQUESTED: Organochlorine Pesticides; Total Arsenic, Lead, Copper, Zinc; Dissolved Arsenic, Lead, Copper, Zinc; Nitrate + Sulfate

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Organochlorine Pesticides (PRESERVATION: I)	Total Arsenic, Lead, Copper, Zinc (PRESERVATION: N)	Dissolved Arsenic, Lead, Copper, Zinc (PRESERVATION: H)	Nitrate + Sulfate (PRESERVATION: I)	REMARKS	No # of Containers
1	TW-7-060112	6-1-12	10:00	✓		GW	2	1	1	1	LAB to Filter Dissolved Metals	
2												
3												
4											Short Hold for Nitrate	
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												

RELINQUISHED BY / DATE/TIME
1: 6/1/12 14:28
2:
3:

RECEIVED BY / DATE/TIME
1: 6/1/12 2:28
2:
3:

SPECIAL INSTRUCTIONS/COMMENTS: Please analyze nitrate on 6-1-12 or 6-2-12. Filter diss. metals upon Receipt.

SHIPMENT METHOD
OUT / / VIA: Client drop off
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers

Turnaround Time Request
- ⊗ Standard 5 Business Days
- ○ 2 Business Day Rush
- ○ Next Business Day Rush
- ○ Same Day Rush (auth req.)
- ○ Other

STATE PROGRAM (if any):
E-mail? Y N, Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES.
SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab ID: 1206099

Case Narrative

Total Metals by ICP/MS Analysis by Method 6020:

Due to sample matrix, sample 1206099-001B required dilution during preparation and/or analysis resulting in elevated reporting limits.

Volatiles Organic Compounds Analysis by Method 8260B:

Methylene chloride was detected in Method Blank 163670 at 8.35 ug/kg which was above reporting limit of 5.00ug/kg resulting in "B" qualified data for all samples with final Reporting Limits less than the value detected in the Method Blank. Associated sample values were greater than approximately 10X the blank value and data was not affected.

The report was revised to remove the Method Detection Limits (MDL) and to change the reporting units to mg/L per email instructions from Rhonda Quinn on 7/19/12.

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-7-060112
Project Name:	BFEL-Atlanta	**Collection Date:**	6/1/2012 10:00:00 AM
Lab ID:	1206099-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.0500		mg/L	162241	10	06/06/2012 19:06	JY
Copper	95.0	0.0200		mg/L	162241	10	06/06/2012 19:06	JY
Lead	0.0391	0.0100		mg/L	162241	10	06/06/2012 19:06	JY
Zinc	226	0.500		mg/L	162241	50	06/07/2012 11:32	JY
ION SCAN SW9056A								
Nitrate	140	12		mg/L	R222484	50	06/01/2012 16:53	GR
Sulfate	2900	50		mg/L	R222484	50	06/01/2012 16:53	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.100		mg/L	162333	20	06/07/2012 11:19	JY
Copper	88.4	0.0400		mg/L	162333	20	06/07/2012 11:19	JY
Lead	0.0404	0.0200		mg/L	162333	20	06/07/2012 11:19	JY
Zinc	237	0.500		mg/L	162333	50	06/07/2012 11:25	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 20:23	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 20:23	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 20:23	KD
alpha-BHC	0.00029	0.000050		mg/L	162330	1	06/07/2012 20:23	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:23	KD
beta-BHC	0.0013	0.000050		mg/L	162330	1	06/07/2012 20:23	KD
delta-BHC	0.00017	0.000050		mg/L	162330	1	06/07/2012 20:23	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 20:23	KD
gamma-BHC	0.00029	0.000050		mg/L	162330	1	06/07/2012 20:23	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:23	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 20:23	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 20:23	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 20:23	KD
Surr: Decachlorobiphenyl	55.7	16.4-114		%REC	162330	1	06/07/2012 20:23	KD
Surr: Tetrachloro-m-xylene	49.6	18.4-120		%REC	162330	1	06/07/2012 20:23	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client AMEC Work Order Number 1206099

Checklist completed by [signature] 06/01/2012
Signature Date

Carrier name: FedEx __ UPS __ Courier __ Client ✓ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 4.0 Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by DM

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1206099

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1206099-001A	TW-7-060112	6/1/2012 10:00:00AM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1206099-001B	TW-7-060112	6/1/2012 10:00:00AM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206099-001B	TW-7-060112	6/1/2012 10:00:00AM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/07/2012
1206099-001C	TW-7-060112	6/1/2012 10:00:00AM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/07/2012
1206099-001D	TW-7-060112	6/1/2012 10:00:00AM	Groundwater	ION SCAN			06/01/2012

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206099

ANALYTICAL QC SUMMARY REPORT

BatchID: 162241

Sample ID: **MB-162241** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658565**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	0.00500	0	0	0	0	0	0	0	0	
Copper	BRL	0.00200	0	0	0	0	0	0	0	0	
Lead	BRL	0.00100	0	0	0	0	0	0	0	0	
Zinc	BRL	0.0100	0	0	0	0	0	0	0	0	

Sample ID: **LCS-162241** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658562**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.09777	0.00500	0.1	0	97.8	80	120	0	0	0	
Copper	0.09670	0.00200	0.1	0	96.7	80	120	0	0	0	
Lead	0.1027	0.00100	0.1	0	103	80	120	0	0	0	
Zinc	0.1031	0.0100	0.1	0	103	80	120	0	0	0	

Sample ID: **1206099-001BMS** Client ID: **TW-7-060112** Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658575**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08467	0.0500	0.1	0	84.7	75	125	0	0	0	
Copper	93.90	0.0200	0.1	94.95	-1050	75	125	0	0	0	S
Lead	0.1359	0.0100	0.1	0.03909	96.8	75	125	0	0	0	

Sample ID: **1206099-001BMS** Client ID: **TW-7-060112** Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/07/2012** Seq No: **4659506**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Zinc	218.8	0.500	0.1	225.7	-6900	75	125	0	0	0	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206099

ANALYTICAL QC SUMMARY REPORT

BatchID: **162241**

Sample ID: **1206099-001BMSD** Client ID: **TW-7-060112** Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658577**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08454	0.0500	0.1	0	84.5	75	125	0.08467	0.154	20	
Copper	92.82	0.0200	0.1	94.95	-2130	75	125	93.90	1.16	20	S
Lead	0.1355	0.0100	0.1	0.03909	96.4	75	125	0.1359	0.295	20	

Sample ID: **1206099-001BMSD** Client ID: **TW-7-060112** Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS** **SW6020A** BatchID: **162241** Analysis Date: **06/07/2012** Seq No: **4659508**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Zinc	219.4	0.500	0.1	225.7	-6350	75	125	218.8	0.251	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206099

ANALYTICAL QC SUMMARY REPORT

BatchID: 162330

Sample ID: **MB-162330** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MBLK** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661325**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDD	BRL	0.10	0	0	0	0	0	0	0	0	
4,4´-DDE	BRL	0.10	0	0	0	0	0	0	0	0	
4,4´-DDT	BRL	0.10	0	0	0	0	0	0	0	0	
alpha-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
alpha-Chlordane	BRL	0.050	0	0	0	0	0	0	0	0	
beta-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
delta-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
Dieldrin	BRL	0.10	0	0	0	0	0	0	0	0	
gamma-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
gamma-Chlordane	BRL	0.050	0	0	0	0	0	0	0	0	
Heptachlor	BRL	0.050	0	0	0	0	0	0	0	0	
Methoxychlor	BRL	0.50	0	0	0	0	0	0	0	0	
Toxaphene	BRL	5.0	0	0	0	0	0	0	0	0	
Surr: Decachlorobiphenyl	0.2618	0	0.5	0	52.4	16.4	114	0	0	0	
Surr: Tetrachloro-m-xylene	0.3004	0	0.5	0	60.1	18.4	120	0	0	0	

Sample ID: **1205O89-001EMS** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MS** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661338**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	0.8545	0.10	1	0	85.4	26.6	137	0	0	0	
Dieldrin	0.8525	0.10	1	0	85.2	38.5	135	0	0	0	
gamma-BHC	0.7701	0.050	1	0	77	36.8	137	0	0	0	
Heptachlor	0.7202	0.050	1	0	72	33.2	123	0	0	0	
Surr: Decachlorobiphenyl	0.3131	0	0.5	0	62.6	16.4	114	0	0	0	
Surr: Tetrachloro-m-xylene	0.2426	0	0.5	0	48.5	18.4	120	0	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206099

ANALYTICAL QC SUMMARY REPORT

BatchID: 162330

Sample ID: **1205O89-001EMSD** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MSD** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661342**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	0.8062	0.10	1	0	80.6	26.6	137	0.8545	5.82	37.8	
Dieldrin	0.8428	0.10	1	0	84.3	38.5	135	0.8525	1.15	25.2	
gamma-BHC	0.8210	0.050	1	0	82.1	36.8	137	0.7701	6.4	36.5	
Heptachlor	0.7755	0.050	1	0	77.6	33.2	123	0.7202	7.39	40.2	
Surr: Decachlorobiphenyl	0.2981	0	0.5	0	59.6	16.4	114	0.3131	0	0	
Surr: Tetrachloro-m-xylene	0.2765	0	0.5	0	55.3	18.4	120	0.2426	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206099

ANALYTICAL QC SUMMARY REPORT

BatchID: 162333

Sample ID: **MB-162333** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MBLK** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658616**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	0.00500	0	0	0	0	0	0	0	0	
Copper	BRL	0.00200	0	0	0	0	0	0	0	0	
Lead	BRL	0.00100	0	0	0	0	0	0	0	0	
Zinc	BRL	0.0100	0	0	0	0	0	0	0	0	

Sample ID: **LCS-162333** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **LCS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658613**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08971	0.00500	0.1	0	89.7	85	115	0	0	0	
Copper	0.08882	0.00200	0.1	0	88.8	85	115	0	0	0	
Lead	0.09428	0.00100	0.1	0	94.3	85	115	0	0	0	
Zinc	0.09392	0.0100	0.1	0	93.9	85	115	0	0	0	

Sample ID: **1205O69-001BMS** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658619**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.09001	0.00500	0.1	0	90	70	130	0	0	0	
Copper	0.08618	0.00200	0.1	0.0002500	85.9	70	130	0	0	0	
Lead	0.09524	0.00100	0.1	0	95.2	70	130	0	0	0	
Zinc	0.2709	0.0100	0.1	0.1802	90.7	70	130	0	0	0	

Sample ID: **1205O69-001BMSD** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658621**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08871	0.00500	0.1	0	88.7	70	130	0.09001	1.45	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206099

ANALYTICAL QC SUMMARY REPORT

BatchID: 162333

Sample ID: **1205O69-001BMSD** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658621**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.08493	0.00200	0.1	0.0002500	84.7	70	130	0.08618	1.46	20	
Lead	0.09456	0.00100	0.1	0	94.6	70	130	0.09524	0.717	20	
Zinc	0.2728	0.0100	0.1	0.1802	92.6	70	130	0.2709	0.699	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206099

ANALYTICAL QC SUMMARY REPORT

BatchID: **R222484**

Sample ID: **MB-R222484** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **MBLK** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654326**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	BRL	0.25	0	0	0	0	0	0	0	0	
Sulfate	BRL	1.0	0	0	0	0	0	0	0	0	

Sample ID: **LCS-R222484** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **LCS** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654324**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.160	0.25	5	0	103	90	110	0	0	0	
Sulfate	25.54	1.0	25	0	102	90	110	0	0	0	

Sample ID: **1206013-005DMS** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **MS** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654329**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.045	0.25	5	0.03866	100	90	110	0	0	0	
Sulfate	27.85	1.0	25	1.868	104	90	110	0	0	0	

Sample ID: **1206013-005DMSD** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **MSD** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654330**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.014	0.25	5	0.03866	99.5	90	110	5.045	0.616	20	
Sulfate	27.69	1.0	25	1.868	103	90	110	27.85	0.597	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

July 23, 2012

Rhonda Quinn
AMEC E&I, Inc.
3200 Town Point Dr.
Kennesaw GA 30144

TEL: (770) 421-3400
FAX: (770) 421-3486

RE: BFEL-Atlanta

Dear Rhonda Quinn: Order No: 1206102

Analytical Environmental Services, Inc. received 8 samples on June 1, 2012 2:14 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES' certifications are as follows:
-NELAC/Florida Certification number E87582 for analysis of Environmental Water, soil/hazardous waste, and Drinking Water Microbiology, effective 07/01/12-06/30/13.
-AIHA Certification ID #100671 for Industrial Hygiene samples (Organics, Inorganics), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) effective until 09/01/13.

These results relate only to the items tested. This report may only be reproduced in full.

If you have any questions regarding these test results, please feel free to call.

Kathryn E. Waters

Kathryn Waters
Project Manager

Revision 7/23/2012

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3785 Presidential Parkway, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

CHAIN OF CUSTODY

2 coolers

Work Order: 1201602

Date: 5-31-12 Page 1 of 1

COMPANY: AMEC E&I

ADDRESS: 3200 Town Point Dr. Ste 100 Kennesaw, GA 30144

PHONE: 770-421-3400

FAX: 770-421-3486

SAMPLED BY: Jeff Moore / Terrell Parker / Daniel Hawk

SIGNATURE: Jeffrey A Moore

ANALYSIS REQUESTED: Organochlorine Pesticides; Total Arsenic, Lead, Copper, Zinc; Dissolved Arsenic, Lead, Copper, Zinc; Nitrate & Sulfate

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

#	SAMPLE ID	SAMPLED DATE	SAMPLED TIME	Grab	Composite	Matrix (See codes)	Organochlorine Pesticides (4°)	Total Arsenic, Lead, Copper, Zinc (N+I)	Dissolved Arsenic, Lead, Copper, Zinc (4°)	Nitrate & Sulfate (4°)	REMARKS	No # of Containers
1	TW-8-053112	5-31-12	10:10	✓		GW	2	1	1	1	Lab to Filter For	5
2	DUP-1-053112	5-31-12	12:00	✓		GW	2	1	1	1	Dissolved metals.	5
3	TW-10-053112	5-31-12	1:35	✓		GW	2	1	1	1		5
4	TW-9-053112	5-31-12	3:30	✓		GW	2	1	1	1	Short Hold For	5
5	TW-3-053112	5-31-12	12:20	✓		GW	2	1	1	1	Nitrate	5
6	TW-4-053112	5-31-12	2:35	✓		GW	2	1	1	1		5
7	TW-11-053112	5-31-12	11:03	✓		GW	2	1	1	1		5
8	TW-12-053112	5-31-12	2:55	✓		GW	2	1	1	1		5
9												
10												
11												
12												
13												
14												

RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME
1	6/1/12 07:49	1	6-1-12 7:49
2	6-1-12 11:07	2	6-1-12 11:07
3	6-1-12 14:14	3	6/1/12 2:14

SPECIAL INSTRUCTIONS/COMMENTS: Please analyze nitrate on 6-1-12. Lab should filter 250mL unpres. for Diss metals

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA: Lab
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: BFEL-Atlanta
PROJECT #: 6122080154
SITE ADDRESS: Atlanta, GA
SEND REPORT TO: Rhonda Quinn
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#:

RECEIPT
Total # of Containers: 40

Turnaround Time Request
⊗ Standard 5 Business Days
○ 2 Business Day Rush
○ Next Business Day Rush
○ Same Day Rush (auth req.)
○ Other _____

STATE PROGRAM (if any): _____
E-mail? (Y) N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab ID: 1206102

Case Narrative

Ion Chromatography Analysis by Method 9056:

Due to sample matrix, sample(s) 1206102-001C, -002C, and -006C required a dilution during preparation and/or analysis resulting in elevated reporting limits for Nitrate.

The report was revised to remove the Method Detection Limits (MDL) and to change the reporting units to mg/L per email instructions from Rhonda Quinn on 7/19/12.

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-8-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 10:10:00 AM
Lab ID:	1206102-001	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	0.101	0.00500		mg/L	162241	1	06/06/2012 19:43	JY
Copper	0.0668	0.00200		mg/L	162241	1	06/06/2012 19:43	JY
Lead	BRL	0.00100		mg/L	162241	1	06/06/2012 19:43	JY
Zinc	4.43	0.0100		mg/L	162241	1	06/06/2012 19:43	JY
ION SCAN SW9056A								
Nitrate	BRL	2.5		mg/L	R222484	10	06/01/2012 17:07	GR
Sulfate	750	10		mg/L	R222484	10	06/01/2012 17:07	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	0.0174	0.00500		mg/L	162333	1	06/06/2012 23:13	JY
Copper	0.0278	0.00200		mg/L	162333	1	06/07/2012 10:54	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 23:13	JY
Zinc	4.16	0.0100		mg/L	162333	1	06/06/2012 23:13	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.010		mg/L	162330	100	06/08/2012 15:29	KD
4,4´-DDE	BRL	0.010		mg/L	162330	100	06/08/2012 15:29	KD
4,4´-DDT	BRL	0.010		mg/L	162330	100	06/08/2012 15:29	KD
alpha-BHC	0.64	0.050		mg/L	162330	1000	06/08/2012 15:40	KD
alpha-Chlordane	BRL	0.0050		mg/L	162330	100	06/08/2012 15:29	KD
beta-BHC	0.11	0.0050		mg/L	162330	100	06/08/2012 15:29	KD
delta-BHC	1.6	0.25		mg/L	162330	5000	06/08/2012 15:51	KD
Dieldrin	BRL	0.010		mg/L	162330	100	06/08/2012 15:29	KD
gamma-BHC	1.3	0.050		mg/L	162330	1000	06/08/2012 15:40	KD
gamma-Chlordane	BRL	0.0050		mg/L	162330	100	06/08/2012 15:29	KD
Heptachlor	0.041	0.0050		mg/L	162330	100	06/08/2012 15:29	KD
Methoxychlor	BRL	0.050		mg/L	162330	100	06/08/2012 15:29	KD
Toxaphene	BRL	0.50		mg/L	162330	100	06/08/2012 15:29	KD
Surr: Decachlorobiphenyl	0	16.4-114	S	%REC	162330	100	06/08/2012 15:29	KD
Surr: Tetrachloro-m-xylene	0	18.4-120	S	%REC	162330	100	06/08/2012 15:29	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	DUP-1-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 12:00:00 PM
Lab ID:	1206102-002	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	0.103	0.00500		mg/L	162241	1	06/06/2012 19:49	JY
Copper	0.0663	0.00200		mg/L	162241	1	06/06/2012 19:49	JY
Lead	BRL	0.00100		mg/L	162241	1	06/06/2012 19:49	JY
Zinc	4.56	0.0100		mg/L	162241	1	06/06/2012 19:49	JY
ION SCAN SW9056A								
Nitrate	BRL	2.5		mg/L	R222484	10	06/01/2012 16:08	GR
Sulfate	710	10		mg/L	R222484	10	06/01/2012 16:08	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	0.0168	0.00500		mg/L	162333	1	06/06/2012 23:19	JY
Copper	0.0247	0.00200		mg/L	162333	1	06/06/2012 23:19	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 23:19	JY
Zinc	4.01	0.0100		mg/L	162333	1	06/06/2012 23:19	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.010		mg/L	162330	100	06/08/2012 16:02	KD
4,4´-DDE	BRL	0.010		mg/L	162330	100	06/08/2012 16:02	KD
4,4´-DDT	BRL	0.010		mg/L	162330	100	06/08/2012 16:02	KD
alpha-BHC	0.70	0.050		mg/L	162330	1000	06/08/2012 16:13	KD
alpha-Chlordane	BRL	0.0050		mg/L	162330	100	06/08/2012 16:02	KD
beta-BHC	0.11	0.0050		mg/L	162330	100	06/08/2012 16:02	KD
delta-BHC	1.6	0.25		mg/L	162330	5000	06/08/2012 16:24	KD
Dieldrin	BRL	0.010		mg/L	162330	100	06/08/2012 16:02	KD
gamma-BHC	1.4	0.050		mg/L	162330	1000	06/08/2012 16:13	KD
gamma-Chlordane	BRL	0.0050		mg/L	162330	100	06/08/2012 16:02	KD
Heptachlor	0.043	0.0050		mg/L	162330	100	06/08/2012 16:02	KD
Methoxychlor	BRL	0.050		mg/L	162330	100	06/08/2012 16:02	KD
Toxaphene	BRL	0.50		mg/L	162330	100	06/08/2012 16:02	KD
Surr: Decachlorobiphenyl	0	16.4-114	S	%REC	162330	100	06/08/2012 16:02	KD
Surr: Tetrachloro-m-xylene	0	18.4-120	S	%REC	162330	100	06/08/2012 16:02	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-10-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 1:35:00 PM
Lab ID:	1206102-003	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162241	1	06/06/2012 19:55	JY
Copper	6.98	0.00200		mg/L	162241	1	06/06/2012 19:55	JY
Lead	0.00271	0.00100		mg/L	162241	1	06/06/2012 19:55	JY
Zinc	9.24	0.0100		mg/L	162241	1	06/06/2012 19:55	JY
ION SCAN SW9056A								
Nitrate	2.9	2.5		mg/L	R222467	10	06/01/2012 15:30	GR
Sulfate	490	10		mg/L	R222467	10	06/01/2012 15:30	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 23:25	JY
Copper	6.43	0.00200		mg/L	162333	1	06/06/2012 23:25	JY
Lead	0.00228	0.00100		mg/L	162333	1	06/06/2012 23:25	JY
Zinc	8.66	0.0100		mg/L	162333	1	06/06/2012 23:25	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 20:56	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 20:56	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 20:56	KD
alpha-BHC	0.000091	0.000050		mg/L	162330	1	06/07/2012 20:56	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:56	KD
beta-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 20:56	KD
delta-BHC	0.00023	0.000050		mg/L	162330	1	06/07/2012 20:56	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 20:56	KD
gamma-BHC	0.00012	0.000050		mg/L	162330	1	06/07/2012 20:56	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 20:56	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 20:56	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 20:56	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 20:56	KD
Surr: Decachlorobiphenyl	56.8	16.4-114		%REC	162330	1	06/07/2012 20:56	KD
Surr: Tetrachloro-m-xylene	53.8	18.4-120		%REC	162330	1	06/07/2012 20:56	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-9-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 3:30:00 PM
Lab ID:	1206102-004	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162241	1	06/06/2012 20:01	JY
Copper	0.0168	0.00200		mg/L	162241	1	06/06/2012 20:01	JY
Lead	BRL	0.00100		mg/L	162241	1	06/06/2012 20:01	JY
Zinc	1.26	0.0100		mg/L	162241	1	06/06/2012 20:01	JY
ION SCAN SW9056A								
Nitrate	0.49	0.25		mg/L	R222467	1	06/01/2012 14:58	GR
Sulfate	170	10		mg/L	R222467	10	06/01/2012 17:01	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 23:31	JY
Copper	0.0158	0.00200		mg/L	162333	1	06/06/2012 23:31	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 23:31	JY
Zinc	1.18	0.0100		mg/L	162333	1	06/06/2012 23:31	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 21:07	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 21:07	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 21:07	KD
alpha-BHC	0.0074	0.00050		mg/L	162330	10	06/08/2012 16:44	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:07	KD
beta-BHC	0.0054	0.00050		mg/L	162330	10	06/08/2012 16:44	KD
delta-BHC	0.0043	0.00050		mg/L	162330	10	06/08/2012 16:44	KD
Dieldrin	0.00010	0.00010		mg/L	162330	1	06/07/2012 21:07	KD
gamma-BHC	0.0011	0.000050		mg/L	162330	1	06/07/2012 21:07	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:07	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 21:07	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 21:07	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 21:07	KD
Surr: Decachlorobiphenyl	50.9	16.4-114		%REC	162330	1	06/07/2012 21:07	KD
Surr: Tetrachloro-m-xylene	52.5	18.4-120		%REC	162330	1	06/07/2012 21:07	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-3-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 12:20:00 PM
Lab ID:	1206102-005	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162241	1	06/06/2012 20:26	JY
Copper	1.09	0.00200		mg/L	162241	1	06/06/2012 20:26	JY
Lead	0.00266	0.00100		mg/L	162241	1	06/06/2012 20:26	JY
Zinc	2.14	0.0100		mg/L	162241	1	06/06/2012 20:26	JY
ION SCAN SW9056A								
Nitrate	9.5	2.5		mg/L	R222467	10	06/01/2012 15:45	GR
Sulfate	550	20		mg/L	R222467	20	06/01/2012 17:31	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 23:37	JY
Copper	1.01	0.00200		mg/L	162333	1	06/06/2012 23:37	JY
Lead	0.00175	0.00100		mg/L	162333	1	06/06/2012 23:37	JY
Zinc	2.00	0.0100		mg/L	162333	1	06/06/2012 23:37	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 21:18	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 21:18	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 21:18	KD
alpha-BHC	0.00063	0.000050		mg/L	162330	1	06/07/2012 21:18	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:18	KD
beta-BHC	0.0010	0.000050		mg/L	162330	1	06/07/2012 21:18	KD
delta-BHC	0.00027	0.000050		mg/L	162330	1	06/07/2012 21:18	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 21:18	KD
gamma-BHC	0.00026	0.000050		mg/L	162330	1	06/07/2012 21:18	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:18	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 21:18	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 21:18	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 21:18	KD
Surr: Decachlorobiphenyl	50.9	16.4-114		%REC	162330	1	06/07/2012 21:18	KD
Surr: Tetrachloro-m-xylene	50.9	18.4-120		%REC	162330	1	06/07/2012 21:18	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-4-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 2:35:00 PM
Lab ID:	1206102-006	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162241	1	06/06/2012 20:32	JY
Copper	0.139	0.00200		mg/L	162241	1	06/06/2012 20:32	JY
Lead	BRL	0.00100		mg/L	162241	1	06/06/2012 20:32	JY
Zinc	0.902	0.0100		mg/L	162241	1	06/06/2012 20:32	JY
ION SCAN SW9056A								
Nitrate	BRL	1.2		mg/L	R222467	5	06/01/2012 17:16	GR
Sulfate	160	5.0		mg/L	R222467	5	06/01/2012 17:16	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 23:44	JY
Copper	0.128	0.00200		mg/L	162333	1	06/06/2012 23:44	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 23:44	JY
Zinc	0.847	0.0100		mg/L	162333	1	06/06/2012 23:44	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 21:29	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 21:29	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 21:29	KD
alpha-BHC	0.00012	0.000050		mg/L	162330	1	06/07/2012 21:29	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:29	KD
beta-BHC	0.014	0.0010		mg/L	162330	20	06/08/2012 16:53	KD
delta-BHC	0.00092	0.000050		mg/L	162330	1	06/07/2012 21:29	KD
Dieldrin	0.00021	0.00010		mg/L	162330	1	06/07/2012 21:29	KD
gamma-BHC	0.00013	0.000050		mg/L	162330	1	06/07/2012 21:29	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:29	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 21:29	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 21:29	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 21:29	KD
Surr: Decachlorobiphenyl	58.4	16.4-114		%REC	162330	1	06/07/2012 21:29	KD
Surr: Tetrachloro-m-xylene	51.2	18.4-120		%REC	162330	1	06/07/2012 21:29	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-11-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 11:03:00 AM
Lab ID:	1206102-007	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A				**(SW3005A)**				
Arsenic	BRL	0.00500		mg/L	162241	1	06/06/2012 20:38	JY
Copper	0.132	0.00200		mg/L	162241	1	06/06/2012 20:38	JY
Lead	0.00252	0.00100		mg/L	162241	1	06/06/2012 20:38	JY
Zinc	0.738	0.0100		mg/L	162241	1	06/06/2012 20:38	JY
ION SCAN SW9056A								
Nitrate	3.7	2.5		mg/L	R222467	10	06/01/2012 16:00	GR
Sulfate	170	10		mg/L	R222467	10	06/01/2012 16:00	GR
Dissolved Metals by ICP/MS SW6020A				**(SW3005A)**				
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 23:50	JY
Copper	0.121	0.00200		mg/L	162333	1	06/06/2012 23:50	JY
Lead	0.00212	0.00100		mg/L	162333	1	06/06/2012 23:50	JY
Zinc	0.688	0.0100		mg/L	162333	1	06/06/2012 23:50	JY
CHLORINATED PESTICIDES, TCL SW8081B				**(SW3510C)**				
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 21:40	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 21:40	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 21:40	KD
alpha-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:40	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:40	KD
beta-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:40	KD
delta-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:40	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 21:40	KD
gamma-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:40	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:40	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 21:40	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 21:40	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 21:40	KD
Surr: Decachlorobiphenyl	63.8	16.4-114		%REC	162330	1	06/07/2012 21:40	KD
Surr: Tetrachloro-m-xylene	64	18.4-120		%REC	162330	1	06/07/2012 21:40	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc **Date:** 23-Jul-12

Client:	AMEC E&I, Inc.	**Client Sample ID:**	TW-12-053112
Project Name:	BFEL-Atlanta	**Collection Date:**	5/31/2012 2:55:00 PM
Lab ID:	1206102-008	**Matrix:**	Groundwater

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162241	1	06/06/2012 20:44	JY
Copper	0.00291	0.00200		mg/L	162241	1	06/06/2012 20:44	JY
Lead	BRL	0.00100		mg/L	162241	1	06/06/2012 20:44	JY
Zinc	0.0715	0.0100		mg/L	162241	1	06/06/2012 20:44	JY
ION SCAN SW9056A								
Nitrate	2.7	0.25		mg/L	R222484	1	06/01/2012 16:38	GR
Sulfate	67	1.0		mg/L	R222484	1	06/01/2012 16:38	GR
Dissolved Metals by ICP/MS SW6020A					**(SW3005A)**			
Arsenic	BRL	0.00500		mg/L	162333	1	06/06/2012 23:56	JY
Copper	BRL	0.00200		mg/L	162333	1	06/06/2012 23:56	JY
Lead	BRL	0.00100		mg/L	162333	1	06/06/2012 23:56	JY
Zinc	0.0529	0.0100		mg/L	162333	1	06/06/2012 23:56	JY
CHLORINATED PESTICIDES, TCL SW8081B					**(SW3510C)**			
4,4´-DDD	BRL	0.00010		mg/L	162330	1	06/07/2012 21:51	KD
4,4´-DDE	BRL	0.00010		mg/L	162330	1	06/07/2012 21:51	KD
4,4´-DDT	BRL	0.00010		mg/L	162330	1	06/07/2012 21:51	KD
alpha-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:51	KD
alpha-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:51	KD
beta-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:51	KD
delta-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:51	KD
Dieldrin	BRL	0.00010		mg/L	162330	1	06/07/2012 21:51	KD
gamma-BHC	BRL	0.000050		mg/L	162330	1	06/07/2012 21:51	KD
gamma-Chlordane	BRL	0.000050		mg/L	162330	1	06/07/2012 21:51	KD
Heptachlor	BRL	0.000050		mg/L	162330	1	06/07/2012 21:51	KD
Methoxychlor	BRL	0.00050		mg/L	162330	1	06/07/2012 21:51	KD
Toxaphene	BRL	0.0050		mg/L	162330	1	06/07/2012 21:51	KD
Surr: Decachlorobiphenyl	44.7	16.4-114		%REC	162330	1	06/07/2012 21:51	KD
Surr: Tetrachloro-m-xylene	67.9	18.4-120		%REC	162330	1	06/07/2012 21:51	KD

Qualifiers:

*	Value exceeds maximum contaminant level	E	Estimated (value above quantitation range)
BRL	Below reporting limit	S	Spike Recovery outside limits due to matrix
H	Holding times for preparation or analysis exceeded	Narr	See case narrative
N	Analyte not NELAC certified	NC	Not confirmed
B	Analyte detected in the associated method blank	<	Less than Result value
>	Greater than Result value	J	Estimated value detected below Reporting Limit

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client AMEC, Inc Work Order Number 1206102

Checklist completed by BMcd 6/1/12
Signature Date

Carrier name: FedEx __ UPS __ Courier ✓ Client __ US Mail __ Other _____

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes ✓ No __ Not Present __

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.1 Cooler #2 3.3 Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes ✓ No __

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes ✓ No __ Not Applicable __

Adjusted? _____ Checked by BM

Sample Condition: Good ✓ Other(Explain) _____

(For diffusive samples or AIHA lead) Is a known blank included? Yes __ No ✓

See Case Narrative for resolution of the Non-Conformance.

* Samples do not have to comply with the given range for certain parameters.

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 23-Jul-12

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1206102

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1206102-001A	TW-8-053112	5/31/2012 10:10:00AM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-001B	TW-8-053112	5/31/2012 10:10:00AM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1206102-001B	TW-8-053112	5/31/2012 10:10:00AM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/07/2012
1206102-001C	TW-8-053112	5/31/2012 10:10:00AM	Groundwater	ION SCAN			06/01/2012
1206102-001D	TW-8-053112	5/31/2012 10:10:00AM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/08/2012
1206102-002A	DUP-1-053112	5/31/2012 12:00:00PM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-002B	DUP-1-053112	5/31/2012 12:00:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1206102-002C	DUP-1-053112	5/31/2012 12:00:00PM	Groundwater	ION SCAN			06/01/2012
1206102-002D	DUP-1-053112	5/31/2012 12:00:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/08/2012
1206102-003A	TW-10-053112	5/31/2012 1:35:00PM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-003B	TW-10-053112	5/31/2012 1:35:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1206102-003C	TW-10-053112	5/31/2012 1:35:00PM	Groundwater	ION SCAN			06/01/2012
1206102-003D	TW-10-053112	5/31/2012 1:35:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1206102-004A	TW-9-053112	5/31/2012 3:30:00PM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-004B	TW-9-053112	5/31/2012 3:30:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1206102-004C	TW-9-053112	5/31/2012 3:30:00PM	Groundwater	ION SCAN			06/01/2012
1206102-004D	TW-9-053112	5/31/2012 3:30:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1206102-004D	TW-9-053112	5/31/2012 3:30:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/08/2012
1206102-005A	TW-3-053112	5/31/2012 12:20:00PM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-005B	TW-3-053112	5/31/2012 12:20:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1206102-005C	TW-3-053112	5/31/2012 12:20:00PM	Groundwater	ION SCAN			06/01/2012
1206102-005D	TW-3-053112	5/31/2012 12:20:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1206102-006A	TW-4-053112	5/31/2012 2:35:00PM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-006B	TW-4-053112	5/31/2012 2:35:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1206102-006C	TW-4-053112	5/31/2012 2:35:00PM	Groundwater	ION SCAN			06/01/2012
1206102-006D	TW-4-053112	5/31/2012 2:35:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1206102-006D	TW-4-053112	5/31/2012 2:35:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/08/2012
1206102-007A	TW-11-053112	5/31/2012 11:03:00AM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-007B	TW-11-053112	5/31/2012 11:03:00AM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012

Client: AMEC E&I, Inc.
Project: BFEL-Atlanta
Lab Order: 1206102

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1206102-007C	TW-11-053112	5/31/2012 11:03:00AM	Groundwater	ION SCAN			06/01/2012
1206102-007D	TW-11-053112	5/31/2012 11:03:00AM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012
1206102-008A	TW-12-053112	5/31/2012 2:55:00PM	Groundwater	Total Metals by ICP/MS		06/04/2012	06/06/2012
1206102-008B	TW-12-053112	5/31/2012 2:55:00PM	Groundwater	Dissolved Metals by ICP/MS SW6020A		06/06/2012	06/06/2012
1206102-008C	TW-12-053112	5/31/2012 2:55:00PM	Groundwater	ION SCAN			06/01/2012
1206102-008D	TW-12-053112	5/31/2012 2:55:00PM	Groundwater	TCL-CHLORINATED PESTICIDES		06/06/2012	06/07/2012

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: 162241

Sample ID: **MB-162241** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MBLK** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658565**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	0.00500	0	0	0	0	0	0	0	0	
Copper	BRL	0.00200	0	0	0	0	0	0	0	0	
Lead	BRL	0.00100	0	0	0	0	0	0	0	0	
Zinc	BRL	0.0100	0	0	0	0	0	0	0	0	

Sample ID: **LCS-162241** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **LCS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658562**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.09777	0.00500	0.1	0	97.8	80	120	0	0	0	
Copper	0.09670	0.00200	0.1	0	96.7	80	120	0	0	0	
Lead	0.1027	0.00100	0.1	0	103	80	120	0	0	0	
Zinc	0.1031	0.0100	0.1	0	103	80	120	0	0	0	

Sample ID: **1206099-001BMS** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658575**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08467	0.0500	0.1	0	84.7	75	125	0	0	0	
Copper	93.90	0.0200	0.1	94.95	-1050	75	125	0	0	0	S
Lead	0.1359	0.0100	0.1	0.03909	96.8	75	125	0	0	0	

Sample ID: **1206099-001BMS** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MS** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/07/2012** Seq No: **4659506**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Zinc	218.8	0.500	0.1	225.7	-6900	75	125	0	0	0	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: **162241**

Sample ID: **1206099-001BMSD** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/06/2012** Seq No: **4658577**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08454	0.0500	0.1	0	84.5	75	125	0.08467	0.154	20	
Copper	92.82	0.0200	0.1	94.95	-2130	75	125	93.90	1.16	20	S
Lead	0.1355	0.0100	0.1	0.03909	96.4	75	125	0.1359	0.295	20	

Sample ID: **1206099-001BMSD** Client ID: Units: **mg/L** Prep Date: **06/04/2012** Run No: **222699**
SampleType: **MSD** TestCode: **Total Metals by ICP/MS SW6020A** BatchID: **162241** Analysis Date: **06/07/2012** Seq No: **4659508**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Zinc	219.4	0.500	0.1	225.7	-6350	75	125	218.8	0.251	20	S

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: 162330

Sample ID: **MB-162330** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MBLK** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661325**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDD	BRL	0.10	0	0	0	0	0	0	0	0	
4,4´-DDE	BRL	0.10	0	0	0	0	0	0	0	0	
4,4´-DDT	BRL	0.10	0	0	0	0	0	0	0	0	
alpha-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
alpha-Chlordane	BRL	0.050	0	0	0	0	0	0	0	0	
beta-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
delta-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
Dieldrin	BRL	0.10	0	0	0	0	0	0	0	0	
gamma-BHC	BRL	0.050	0	0	0	0	0	0	0	0	
gamma-Chlordane	BRL	0.050	0	0	0	0	0	0	0	0	
Heptachlor	BRL	0.050	0	0	0	0	0	0	0	0	
Methoxychlor	BRL	0.50	0	0	0	0	0	0	0	0	
Toxaphene	BRL	5.0	0	0	0	0	0	0	0	0	
Surr: Decachlorobiphenyl	0.2618	0	0.5	0	52.4	16.4	114	0	0	0	
Surr: Tetrachloro-m-xylene	0.3004	0	0.5	0	60.1	18.4	120	0	0	0	

Sample ID: **1205O89-001EMS** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MS** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661338**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	0.8545	0.10	1	0	85.4	26.6	137	0	0	0	
Dieldrin	0.8525	0.10	1	0	85.2	38.5	135	0	0	0	
gamma-BHC	0.7701	0.050	1	0	77	36.8	137	0	0	0	
Heptachlor	0.7202	0.050	1	0	72	33.2	123	0	0	0	
Surr: Decachlorobiphenyl	0.3131	0	0.5	0	62.6	16.4	114	0	0	0	
Surr: Tetrachloro-m-xylene	0.2426	0	0.5	0	48.5	18.4	120	0	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: 162330

Sample ID: **1205O89-001EMSD** Client ID: Units: **ug/L** Prep Date: **06/06/2012** Run No: **222813**
SampleType: **MSD** TestCode: **CHLORINATED PESTICIDES, TCL SW8081B** BatchID: **162330** Analysis Date: **06/07/2012** Seq No: **4661342**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
4,4´-DDT	0.8062	0.10	1	0	80.6	26.6	137	0.8545	5.82	37.8	
Dieldrin	0.8428	0.10	1	0	84.3	38.5	135	0.8525	1.15	25.2	
gamma-BHC	0.8210	0.050	1	0	82.1	36.8	137	0.7701	6.4	36.5	
Heptachlor	0.7755	0.050	1	0	77.6	33.2	123	0.7202	7.39	40.2	
Surr: Decachlorobiphenyl	0.2981	0	0.5	0	59.6	16.4	114	0.3131	0	0	
Surr: Tetrachloro-m-xylene	0.2765	0	0.5	0	55.3	18.4	120	0.2426	0	0	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: 162333

Sample ID: **MB-162333** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MBLK** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658616**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	BRL	0.00500	0	0	0	0	0	0	0	0	
Copper	BRL	0.00200	0	0	0	0	0	0	0	0	
Lead	BRL	0.00100	0	0	0	0	0	0	0	0	
Zinc	BRL	0.0100	0	0	0	0	0	0	0	0	

Sample ID: **LCS-162333** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **LCS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658613**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08971	0.00500	0.1	0	89.7	85	115	0	0	0	
Copper	0.08882	0.00200	0.1	0	88.8	85	115	0	0	0	
Lead	0.09428	0.00100	0.1	0	94.3	85	115	0	0	0	
Zinc	0.09392	0.0100	0.1	0	93.9	85	115	0	0	0	

Sample ID: **1205O69-001BMS** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MS** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658619**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.09001	0.00500	0.1	0	90	70	130	0	0	0	
Copper	0.08618	0.00200	0.1	0.0002500	85.9	70	130	0	0	0	
Lead	0.09524	0.00100	0.1	0	95.2	70	130	0	0	0	
Zinc	0.2709	0.0100	0.1	0.1802	90.7	70	130	0	0	0	

Sample ID: **1205O69-001BMSD** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658621**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Arsenic	0.08871	0.00500	0.1	0	88.7	70	130	0.09001	1.45	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: 162333

Sample ID: **1205O69-001BMSD** Client ID: Units: **mg/L** Prep Date: **06/06/2012** Run No: **222700**
SampleType: **MSD** TestCode: **Dissolved Metals by ICP/MS SW6020A** BatchID: **162333** Analysis Date: **06/06/2012** Seq No: **4658621**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Copper	0.08493	0.00200	0.1	0.0002500	84.7	70	130	0.08618	1.46	20	
Lead	0.09456	0.00100	0.1	0	94.6	70	130	0.09524	0.717	20	
Zinc	0.2728	0.0100	0.1	0.1802	92.6	70	130	0.2709	0.699	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: **R222467**

Sample ID: **MB-R222467** Client ID: Units: **mg/L** Prep Date: Run No: **222467**
SampleType: **MBLK** TestCode: **ION SCAN SW9056A** BatchID: **R222467** Analysis Date: **06/01/2012** Seq No: **4653890**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	BRL	0.25	0	0	0	0	0	0	0	0	
Sulfate	BRL	1.0	0	0	0	0	0	0	0	0	

Sample ID: **LCS-R222467** Client ID: Units: **mg/L** Prep Date: Run No: **222467**
SampleType: **LCS** TestCode: **ION SCAN SW9056A** BatchID: **R222467** Analysis Date: **06/01/2012** Seq No: **4653888**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	4.885	0.25	5	0	97.7	90	110	0	0	0	
Sulfate	23.95	1.0	25	0	95.8	90	110	0	0	0	

Sample ID: **1206005-001FMS** Client ID: Units: **mg/L** Prep Date: Run No: **222467**
SampleType: **MS** TestCode: **ION SCAN SW9056A** BatchID: **R222467** Analysis Date: **06/01/2012** Seq No: **4653894**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.207	0.25	5	0.2596	99	90	110	0	0	0	
Sulfate	23.82	1.0	25	0.5421	93.1	90	110	0	0	0	

Sample ID: **1206005-001FMSD** Client ID: Units: **mg/L** Prep Date: Run No: **222467**
SampleType: **MSD** TestCode: **ION SCAN SW9056A** BatchID: **R222467** Analysis Date: **06/01/2012** Seq No: **4653896**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.231	0.25	5	0.2596	99.4	90	110	5.207	0.445	20	
Sulfate	23.72	1.0	25	0.5421	92.7	90	110	23.82	0.432	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

Client: AMEC E&I, Inc.
Project Name: BFEL-Atlanta
Workorder: 1206102

ANALYTICAL QC SUMMARY REPORT

BatchID: **R222484**

Sample ID: **MB-R222484** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **MBLK** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654326**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	BRL	0.25	0	0	0	0	0	0	0	0	
Sulfate	BRL	1.0	0	0	0	0	0	0	0	0	

Sample ID: **LCS-R222484** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **LCS** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654324**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.160	0.25	5	0	103	90	110	0	0	0	
Sulfate	25.54	1.0	25	0	102	90	110	0	0	0	

Sample ID: **1206013-005DMS** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **MS** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654329**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.045	0.25	5	0.03866	100	90	110	0	0	0	
Sulfate	27.85	1.0	25	1.868	104	90	110	0	0	0	

Sample ID: **1206013-005DMSD** Client ID: Units: **mg/L** Prep Date: Run No: **222484**
SampleType: **MSD** TestCode: **ION SCAN SW9056A** BatchID: **R222484** Analysis Date: **06/01/2012** Seq No: **4654330**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Nitrate	5.014	0.25	5	0.03866	99.5	90	110	5.045	0.616	20	
Sulfate	27.69	1.0	25	1.868	103	90	110	27.85	0.597	20	

Qualifiers:

>	Greater than Result value	<	Less than Result value	B	Analyte detected in the associated method blank
BRL	Below reporting limit	E	Estimated (value above quantitation range)	H	Holding times for preparation or analysis exceeded
J	Estimated value detected below Reporting Limit	N	Analyte not NELAC certified	R	RPD outside limits due to matrix
Rpt Lim	Reporting Limit	S	Spike Recovery outside limits due to matrix		

FIELD SAMPLING FORMS

AMEC E&I

Groundwater Sampling Form

Page 1 of 1

Project/No. 6122080154- BFEL | Well TW-1 | Date 5-~~29~~ 30-12

Screen Setting 15.3 25.3 | Measuring Point Description TOC | Casing Diameter (inches) 1"

Static Water Level 16.0 | Measured Width 1" | Well Materials ✓ PVC ___ ST. Steel

Total depth 25.3 | Pump On: 11:10 | Pump Intake: 23'

Purge Method | Pump Off: 12:20 | Volumes Purged 2.5 Gal

Centrifugal ___ | Sample Time: 12:00 | 1 vol = .041 gal/ft × water column = 0.38 gal × 3 = 1.14

Submersible ___

Other Peristaltic | Bailer Type: NA | Sampled By: JAM

Time	Minutes Elapsed	Rate (gpm) mL/m	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turb	~~DO~~	REMARKS
11:10	0	300	18.95	0.05	5.96	0.37	18.3	9.24		Clear - Slow Pump
11:15	5	275	19.8	0.2	6.16	0.34	17.9	3.58		clear - slow Pump
11:20	10	250	20.5	0.4	6.19	0.36	17.8	1.98		Clear - Slow pump
11:30	20	175	21.85	1	6.24	0.35	18	0.76		
11:40	30	175	21.9	1.5	6.19	0.36	18.3	0.87		
11:50	40	175	21.92	2	6.19	0.36	18.4	0.75		
12:00 - Parameters Stable - Sample For Pesticides - Metals - Nitrates & Sulfate										

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Groundwater Sampling Form

Page ____ of ____

Project/No. 6122080154- BFEL | Well TW-2 | Date 5-~~29~~ 30-12

Screen Setting 19.7-29.7 | Measuring Point Description TOC | Casing Diameter (inches) 1"

Static Water Level 22.44 | Measured Width 1" | Well Materials ✓ PVC ____ ST. Steel

Total depth 29.7 | Pump On: 12:40 | Pump Intake: 27'

Purge Method | Pump Off: 1:35 | Volumes Purged 1.5

Centrifugal ____ | Sample Time: 1:15 | 1 vol = .29 gal x 3 = 0.89 gal

Submersible ____

Other Peristaltic | Bailer Type: NA | Sampled By: JAm

Time	Minutes Elapsed	Rate ~~(gpm)~~ ml/m	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turbidity	~~DO~~	REMARKS
12:42	2	180	23.6	.05	5.82	0.38	19.6	4.39		Slow Recharge
12:50	10	180	24.8	.5	6.05	0.39	18.7	4.84		
12:55	15	175	25.3	.75	6.02	0.38	18.6	2.13		
1:00	20	175	25.6	1	6.04	0.38	18.6	2.53		
1:05	25	175	25.65	1.25	6.04	0.39	18.6	2.86		
1:10	30	175	25.67	1.5	6.03	0.38	18.6	2.27		
1:15 Parametos Stable - Sample for Metals, Pesticides, Nitrates & Sulfate										

AMEC E&I

Groundwater Sampling Form

Page 1 of 1

Project/No. _____ Well TW-3 Date 5/31/12

Screen Setting 30-40 Measuring Point Description _____ Casing Diameter (inches) 1"

Static Water Level 26.85 Measured Width _____ Well Materials PVC ____ ST. Steel

Total depth 40.0 Pump On: 1050 Pump Intake: 35.0

13.15 x 0.041 = 0.54 x 3 = 1.6 total vol

Purge Method Pump Off: _____ Volumes Purged 1.6 gal

Centrifugal _____ Sample Time: 1220

Submersible _____

Other Bladder pump Bailer Type: _____ Sampled By: Daniel Howard

Time	Minutes Elapsed	Rate ~~(gpm)~~ ml/min	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turb	DO	REMARKS
1100		75 ~~100~~	NA*	0.1	4.0	1.70	22.0	131		*water level meter will
1130		100		0.5	4.02	1.64	22.0	77.9		not fit in well with
1150		100		1.0	4.16	1.52	20.0	24.2		pump
1200		100		1.25	4.29	1.45	20.4	12.5		
1210		100		1.5	4.31	1.43	20.6	7.89		
1215		100		1.6	4.33	1.43	20.8	8.82		
										Final water level
										after sampling
										26.96

AMEC E&I

Groundwater Sampling Form

Project/No. _____ Well TW-4 Date 5/31/12

Screen Setting 24.1-34.1 Measuring Point Description _____ Casing Diameter (inches) 1"

Static Water Level 27.70 Measured Width _____ Well Materials PVC ____ ST. Steel

Total depth 34.1 Pump On: 1350 Pump Intake: 31'

6.4 x 0.041 = 0.26 x 3 = 0.78 g (total vol)

Purge Method Pump Off: _____ Volumes Purged _____

Centrifugal _____ Sample Time: 1435

Submersible _____

Other Bladder pump Bailer Type: _____ Sampled By: Daniel Howard

Time	Minutes Elapsed	Rate ~~(gpm)~~ ml/min	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turb	DO	REMARKS
1355		80.0	NA*	0	4.72	0.46	22.7	36.4		* Water level meter
1405		80		0.25	4.70	0.45	21.9	8.12		cannot fit in well
1415		80		0.5	4.68	0.46	21.6	3.21		with sampling tubing
1425		80		0.75	4.62	0.45	20.6	1.75		
1430		80		0.85	4.62	0.45	20.1	1.73		
										Final water level
										after sampling
										28.05 ft

AMEC E&I

Groundwater Sampling Form

Page 1 of 30

Project/No. 6122080154- BFEL Well TW-5 Date 5-29-12

Screen Setting 23-33' Measuring Point Description TOC Casing Diameter (inches) 1

Static Water Level 22.57 Measured Width 1" Well Materials ✓ PVC ___ ST. Steel

Total depth 33' Pump On: 2:37 Pump Intake: 28'

Purge Method Pump Off: 4:55 Volumes Purged 5.25

Centrifugal ___ Sample Time: 4:40 1 vol = .43 gal x 3 = 1.28 Gal

Submersible ___

Other Peristaltic Bailer Type: NA Sampled By: Jeff Moore

Time	Minutes Elapsed	Rate (gpm) ml/m	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turb	~~DO~~	REMARKS
2:38	1	275	23.4	.05	6.36	1.54	19.8	1730		Very Turbid
2:42	5	275	23.71	.5	6.20	1.50	17.9	1789		
2:52	15	250	23.55	1	6.09	1.48	17.9	9796		? Increasing Turbidity
2:57	20	200	23.40	1.25	6.08	1.48	17.8	8000		
3:00-	Stop Pump- Battery Low- Will have to use truck power									
3:10-	Start Pumping Again- Reset Elapsed Time & Gal Purged									
3:15	5	280	23.63	.05	5.85	1.42	18.1	1572		
3:25	15	280	23.74	1.10	5.74	1.48	17.5	602		
3:35	25	280	23.73	2	5.71	1.37	17.5	518		
3:45	35	280	23.74	2.7	5.51	1.35	17.5	215		
3:55	45	280	23.74	3.2	5.49	1.33	17.5	95.4		
4:10	60	280	23.73	4	5.36	1.32	17.5	25.3		Finally Clearing
4:20	70	280	23.74	4.5	5.38	1.32	17.7	17.3		
4:30	80	280	23.74	5	5.37	1.32	17.7	8.69		
4:35	85	280	23.74	5.25	5.35	1.31	17.7	7.76		
4:40-	Sample For metals, Pesticides, Nitrates & Sulfate									
Filled	the total metals Jar up last with an ending turbidity of 7.41									

Blank GW sample form.xls.xls
5/29/2012

AMEC E&I

Groundwater Sampling Form

Page 1 of 1

Project/No. 6122-08-0154 Well MW-6 (TOP 5/30/12) Date 5-30-12 / 16:38 (Sample time)

Screen Setting 37.9' bgs to 27.9' bgs

Measuring Point Description TOC

Casing Diameter (inches) 1"

Static Water Level 25.71'

Measured Width

Well Materials ✓ PVC ___ ST. Steel

Total depth 40.30

Pump On: 16:05

Pump Intake: 38.3'

Purge Method

Pump Off:

Volumes Purged

Centrifugal ___ Sample Time:

Submersible Bladder pumps w/ PTFE Lined tubing

Other

Bailer Type:

Sampled By: T. Parker

Time	Minutes Elapsed Min.	Rate (gpm) ml/min.	DTW 1" well	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	ORP NTU Turb.	DO	REMARKS
										mp-10 Settings
16:05	5min.	200	N/A	0.25	4.69	1.95	19.3	22.9		2 sec. Recharge
16:15	10min.	200		0.50	4.59	2.02	18.3	12.6		2 sec. Discharge
16:20	15min	200		0.75	4.59	2.03	18.2	5.07		@ 38psi
16:25	20min.	200		1.0	4.54	2.03	18.2	5.51		
16:30	25min.	200		1.25	4.54	2.04	18.0	4.46		
16:35	30min.	200		1.50	4.51	2.04	18.2	3.36		Collected (in order)
								3.58		2x 1L Amb/unpres.
										Anions 1x 500mL pl unpres.
										Diss. metals 1x 250 mL pl unpres.
										TOT. METALS 1x 250 mL pl HNO3
										During METALS sample collection 16:50

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5/29/2012

FIELD SAMPLING REPORT

PROJECT NO: 6122-08-0154

MACTEC ENGINEERING AND CONSULTING, INC.
3200 TOWN POINT DRIVE, SUITE 100 KENNESAW GA 30144
PHONE: (770) 421-3400 / FAX: (770) 421-3486

WELL ID: TW-7 DEPTH TO PRODUCT: N/A DATE: 6-1-12

SAMPLE METHOD: bladder pump w/ teflon line & tubing TIME: 10:00

DUP./REP. OF: N/A DEPTH TO WATER: 21.48 btoc GRAB (✓) COMPOSITE ( )

TOTAL DEPTH: 32.3 btoc water column = 10.82' X 0.041 = 0.44 gal.

PURGE VOLUME:

[0.163 x water column height (ft) x 3 (well volumes) for 2" wells]

TIME (Begin purge)	VOL. PURGED (gal)	±0.1 pH	TEMP (°C)	±3% SPEC. COND. (ms/cm)	±10 mV ORP (mV)	<50 TURB. (NTU)	±10% 6-1-12 N/A only DO (mg/L)	Pump Rate ml/min. (& pump setting)	New Water Level
Initial: 09:03		4.08	19.5	6.22		10.82		150 ( )	27.80'
09:13	0.10	4.10	19.0	~~20.6~~ 6.27		9.56		150	
09:18	0.25	4.12	18.8	6.11		7.80		150	27.46'
09:23	0.50	4.06	18.7	6.09		230		150	
09:28	0.70	4.04	18.7	6.11		227		150	
09:33	0.90	4.04	18.6	5.95		44.7		150	
09:38	1.1	4.06	18.7	5.97		36.1		150	
09:43	1.3	4.05	18.7	6.02		24.9			
* 09:48	1.5	4.03	18.7	6.04		23.8			
09:53	1.7	4.03	18.7	6.15		29.8			
09:59	1.8	4.02	18.8	6.15		3.48 ✓			
10:00	Begin Collecting Gw Samples.								
						3.15 @ completion of metals samples.			
							DOP 6-1-12		

COMMENTS: CAL check Lamotte 2020 ser. #2533-1701 1.0 NTU = 0.99 NTU
10.0 NTU = 9.81 NTU
Hanna 991301 Ser # A02350 pH 7.0 = 7.00
pH 4.0 = 4.00 cond. 12.88 mS = 12.89 mS
Read = 12.88 mS

* well water to top of pump. pulling air/water.

CONTAINER SIZE/TYPE	NO.	PRESERVATIVE	ANALYTICAL METHOD	ANALYSIS
1L amb Gl	2	None	8081	Pesticides
1x500mL PL	1	None	300.0	Anions (NO3, SO4)
1x250mL PL	1	None	6010	DISS. METALS
1x250mL PL	1	HNO3	6010	TOTAL METALS

GENERAL INFORMATION	
WEATHER:	OVERCAST, Sporadic Sprinkle
SHIPPED VIA:	
SHIPPED TO:	AES - ATLANTA
SAMPLER: T. PARKER	OBSERVER: Jeff Moore

AMEC E&I

Groundwater Sampling Form

Dup-1-053112

Page 1 of ____

Project/No. 6122080154 - BFEL | Well TW-8 | Date 5-31-12

Screen Setting: 20.5-30.5 | Measuring Point Description: TOC | Casing Diameter (inches): 1

Static Water Level: 19.98 | Measured Width: 1" | Well Materials: ✓ PVC ___ ST. Steel

Total depth: 30.5 | Pump On: 9:15 | Pump Intake: 26'

Purge Method | Pump Off: 10:50 (to fill all jars) | Volumes Purged: 2.5 Gal

1 vol = 0.43 x 3 = 1.39 gal

Centrifugal ___ | Sample Time: 10:10 (12:00 for Dup-1)

Submersible ___

Other: Peristaltic | Bailer Type: NA | Sampled By: JAm

Time	Minutes Elapsed	Rate ~~(gpm)~~ ml/m	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turbidity	~~DO~~	REMARKS
9:17	2	150	20.5	.05	6.09	1.95	18.9	7.79		Relatively clear -
9:25	10	150	20.63	.3	6.22	2.02	18.0	4.38		strong chemical odor
9:35	20	150	20.7	.7	6.20	1.99	18.2	2.45		
9:45	30	150	20.71	1.1	6.19	1.97	18.1	2.10		
9:55	40	150	20.72	1.5	6.17	1.92	18.1	3.09		
10:00	45	150	20.72	1.8	6.19	1.92	18.0	2.98		
10:05	50	150	20.72	2.1	6.18	1.91	18.1	2.01		
10:10 Parameters Stable - Sample Pesticides, metals, Nitrates, Sulfate TW-8-053112										
Also Take Dup-1 Here										
Alternate filling Sample Containers Between TW-8 & Dup-1 Total metals Filled Last										
Final Turbidity after Sampling = 0.45										

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5/29/2012

AMEC E&I

Groundwater Sampling Form

Page 1 of ____

Project/No. 6122080154 Well TW-9 Date 5-31-12

Screen Setting 25.3 - 35.3 Measuring Point Description TOC Casing Diameter (inches) 1"

Static Water Level 21.49 Measured Width 1" Well Materials ✓ PVC ____ ST. Steel

Total depth 35.3' Pump On: 2:37 Pump Intake: 30'

Purge Method Pump Off: Volumes Purged 1 vol = .56 x 3 = 1.7 gal

Centrifugal ____ Sample Time: ____

Submersible ____

Other Peristaltic Bailer Type: NA Sampled By: JAm

Time	Minutes Elapsed	Rate ~~(gpm)~~ ml/min	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turbidity	~~DO~~	REMARKS
2:39	2	150	22.16	.05	5.95	0.66	21.5	16.9		
2:47	10	150	22.20	.2	5.80	0.61	18.8	5.58		
2:57	20	150	22.19	0.6	5.81	0.61	18.6	3.59		Clear
3:07	30	150	22.18	1.0	5.81	0.61	18.5	1.44		
3:17	40	150	22.17	1.5	5.79	0.61	18.6	0.38		
3:27	50	150	22.17	2	5.78	0.61	18.6	0.47		
3:30	Parameters stable sample for Pesticides, Metals, Nitrates Sulfate									

AMEC E&I

Groundwater Sampling Form

Page ____ of ____

Project/No. 6122080154-BFEL Well TW-10 Date 5-31-12

Screen Setting 20' - 30' Measuring Point Description TOC Casing Diameter (inches) 1

Static Water Level 18.35 Measured Width 1" Well Materials ✓ PVC ____ ST. Steel

Total depth 30' Pump On: 12:57 Pump Intake: 25'

Purge Method Pump Off: 1:55 Volumes Purged 1.7 Gal

Centrifugal ____ Sample Time: 1:35 1 vol = 0.47 x 3 = 1.43 gal

Submersible ____

Other Peristaltic Bailer Type: NA Sampled By: JAM

Time	Minutes Elapsed	Rate ~~(gpm)~~ ml/m	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turbidity	~~DO~~	REMARKS
1:00	3	175	18.98	.05	4.07	1.00	21	41.5		Slightly cloudy
1:07	10	150	18.90	.2	4.07	.99	19.3	13.8		Clearing
1:17	20	150	18.89	.8	4.10	0.94	18.1	7.63		
1:27	30	150	18.87	1.4	4.10	0.93	17.9	6.20		
1:32	35	150	18.87	1.7	4.10	0.92	17.8	6.43		
1:35 - Parameters Stable - Sample For Pesticides - Metals - Nitrate & Sulfate										
	Filled total metals jar last & Final turbidity = 4.29									

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5/29/2012

Hanna HI 991301 SER# A02350 CAL-check @22.8°C pH 7.0 = 7.01 pH 4.0 = 4.00 Cond. = 13.02 → Recal: 12.88mS = 12.88mS @22.8°C

AMEC E&I

Groundwater Sampling Form

Page 1 of 1

Project/No. 6122-08-0154 Well TW-11 Date 5-31-12 / 11:03 (sample time)

Screen Setting 45.10'-35.10 (toc) Measuring Point Description TOC Casing Diameter (inches) 1"

Static Water Level 30.75 Measured Width Well Materials ✓ PVC ST. Steel

Water column = 14.35' x 0.041 = 0.59 Gal

Total depth 45.10' (including stickup) Pump On: 10:04 Pump Intake: 42.10'

Purge Method Pump Off: 11:25 Volumes Purged

Centrifugal Sample Time:

Submersible bladder w/teflon-lined tubing Sampled By: T. Parker

Other Bailer Type:

Time	Minutes Elapsed	Rate (gpm) ml/min	DTW	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	ORP Turb NTU	DO N/A	REMARKS
10:17	~~10:17~~ 13	200	N/A	0.5	4.65	0.54	17.2	54.2		
10:22	18	200		0.75	4.75	0.52	16.9	6.91		
10:42	38	200		2.00	4.60	0.51	17.0	1.63		
10:47	43	200		2.25	4.82	0.51	17.1	1.42		
10:52	48	200		2.50	4.80	0.51	17.1	1.32		
10:57	53	200		2.75	4.77	0.51	17.0	0.89		
11:02	58	200		3.00	4.78	0.51	17.0	0.81		
11:03	collect GW Samples									2 x 1L Amb. glass - unpres - pest.
										1 x 500 ml PL - unpres. - Anions
										1 x 250 ml PL - unpres. - Diss. metals
										1 x 250 ml PL w/ HNO3 - Total metals

AMEC E&I

Groundwater Sampling Form

Project/No. 6122-08-0154 Well TW-12 Date 5-31-12

Screen Setting 45.8'-35.8' btoc Measuring Point Description TOC Casing Diameter (inches) 1"

Static Water Level 34.80' Measured Width Well Materials ✓ PVC ___ ST. Steel

Total depth 45.8' btoc Pump On: 12:27 Pump Intake: ~~42.8'~~ 41.8' btoc op 5-31-12

Purge Method Pump Off: Volumes Purged

Centrifugal ___ Sample Time:

Submersible bladder pump w/ teflon-lined tubing Sampled By: T. Parker

Other ___ Bailer Type:

Time	Minutes Elapsed	Rate (gpm) ml/min	DTW 1" well	Gallons Purged	pH	Cond. ms/cm	TEMP. (C)	~~ORP~~ Turb. NTU	DO N/A	REMARKS
12:35	8	200	N/A	0.25	6.15	0.37	19.0	32.0		
12:40	13	200		0.50	6.10	0.36	18.6	16.7		
12:45	18	200		0.75	6.09	0.34	18.3	12.8		
12:50	23	200		1.00	6.04	0.33	18.4	10.15		
12:55	28	200		1.25	6.04	0.33	18.4	10.18		
13:00	33	200		1.50	6.04	0.34	18.4	12.7		
13:05	38	200		1.75	6.03	0.34	18.3	9.06		
13:10	43	200		2.00	6.04	0.34	18.3	8.82		
13:15	48	200		2.25	6.04	0.35	18.3	8.87		
13:20	53	200		2.50	6.08	0.35	18.4	13.3		emptied measuring cup.
13:30	63	200		3.00	6.21	0.36	18.4	16.6		
13:40	73	200		3.50	6.27	0.37	18.7	32.7		pulled pump up 1'
13:45	78	200	—	—	—	—	~~op~~	~~5-31-12~~		emptied measuring cup
13:50	83	200		3.75	6.27	0.37	18.7	28.1		
14:00	93	200		4.00	6.22	0.36	18.7	79.3		
14:05										pulled pump - cleaned bladder with DI water + reinstalled. Replaced outlet tubing o-Ring + Reseated tubing.
14:10	Restarted pump after reinstalling in well									
14:19	102	200		4.25	6.27	0.35	18.9	24.7		
14:24	107	200		4.50	6.13	0.35	18.8	18.4		emptied measuring cup
14:29	112	200		4.75	6.24	0.35	18.6	17.2		
14:34	117	200		5.00	6.23	0.36	18.8	16.2		
14:44	127	200		5.25	6.17	0.36	18.9	14.3		
14:54	137	200		5.50	6.15	0.36	18.8	15.2		Tw order:
14:55	Begin Collecting Gw Samples							21.1 after		2 x 1L Amb. glass, unpres. Pest.
								21.9 1st 1L GL 2nd 1L GL		1 x 500mL PL, unpres, Anions
								36.9 500 mL after		1 x 250 mL PL, unpres. Diss. metals
								36.5 1st after 250mL PL unpres.		1 x 250mL PL, HNO3 Tot. metals
								36.6 After 250mL PL w/HNO3		

APPENDIX C

UPDATED EPC AND UCL CALCULATIONS

UPDATED EPC TABLES

BFEL Surface Soil

Parameter	Mininum Detected, mg/kg	Maximum Detected, mg/kg	Frequency of Detection	Exposure Point Concentration (EPC), mg/kg	Basis for EPC	Notification Concentration, mg/kg	Target (Maximum On-Site Surface) RRS, mg/kg	Goal to Achieve (EPC < RRS)	Removal of Soil Locations to Achieve EPC < Target RRS
VOCs/SVOCs									
2,4-Dinitrotoluene	7.5	7.5	1 / 21	7.5	Max	0.66	**6.9**	7.5	SS-14
Acenaphthene	0.41	0.75	2 / 20	0.75	Max	300	NA	NA	
Acenaphthylene	0.14	0.72	4 / 20	0.72	Max	130	NA	NA	
Anthracene	0.064	6.9	7 / 20	1.73	95% KM (t) UCL	500	25000	NA	
Benzo(a)anthracene	0.025	32	20 / 33	13.8	99% KM (Chebyshev) UCL	5	590	NA	
Benzo(a)pyrene	0.0052	14	20 / 33	2.26	95% KM (BCA) UCL	1.6	59	NA	
Benzo(b)fluoranthene	0.0052	2.9	7 / 13	0.873	95% KM (BCA) UCL	5	590	NA	
Benzo(b,k)fluoranthene	0.096	22	13 / 20	6.24	95% KM (BCA) UCL	5	590	NA	
Benzo(ghi)pyrene	0.025	21	12 / 33	2.51	95% KM (t) UCL	500	2300	NA	
Benzo(k)fluoranthene	0.0021	0.99	7 / 13	0.417	95% KM (t) UCL	5	5900	NA	
Chrysene	0.13	32	19 / 33	13.8	99% KM (Chebyshev) UCL	5	59000	NA	
Fluoranthene	0.18	34	18 / 33	16.5	99% KM (Chebyshev) UCL	500	11000	NA	
Fluorene	0.41	0.57	2 / 20	0.57	Max	360	NA	NA	
Indeno(1,2,3-cd)pyrene	0.31	3.4	6 / 20	1.26	95% KM (t) UCL	5	590	NA	
Naphthalene	0.071	0.25	4 / 20	0.25	Max	100	NA	NA	
Phenanthrene	0.55	0.9	3 / 12	0.667	95% KM (t) UCL	110	110	NA	
Pyrene	0.087	32	20 / 33	16.9	99% KM (Chebyshev) UCL	500	8400	NA	
Pesticides									
Aldrin	0.039	140	4 / 22	19.21	95% KM (t) UCL	0.66	**13**	>95	SS-21
alpha, beta, delta-BHC	0.006	40.7	26 / 29	11.3	95% KM (Chebyshev) UCL	0.66	**1.7**	>3.7	MW-23, SS-7, SB-8, MW-14, MW-9, MW-13,, SS-2, SS-3
alpha -BHC	0.005	960	25 / 48	221.6	99% KM (Chebyshev) UCL	0.66	**1.7**	>5.5	SS-24, SS-21
beta-BHC	0.0092	930	23 / 41	255.1	99% KM (Chebyshev) UCL	0.66	**5.8**	>18	SS-24, SS-21
Chlordane	0.012	390	51 / 83	61.14	97.5% KM (Chebyshev) UCL	9.2	87	NA	
DDD	0.013	550	29 / 69	73.92	97.5% KM (Chebyshev) UCL	0.66	1800	NA	
DDE	0.0029	94	63 / 79	11.45	95% KM (Chebyshev) UCL	0.66	1200	NA	
DDT	0.003	9100	68 / 79	1058	97.5% KM (Chebyshev) UCL	0.66	**310**	>1280	SS-24, SS-2, SS-21
delta-BHC	0.003	69	14 / 43	5.602	95% KM (t) UCL	25	25	NA	
Dieldrin	0.0052	590	26 / 70	63.44	97.5% KM (Chebyshev) UCL	0.66	**4.5**	>3.56803	SS-24, SS-21
Endosulfan sulfate	1.3	1.3	1 / 20	1.3	Max	1.7	NA	NA	
Endosulfan I	0.005	0.005	1 / 20	0.005	Max	10	NA	NA	
Endrin	0.15	38	4 / 45	2.71	95% KM (t) UCL	10	31	NA	
gamma-BHC (Lindane)	0.0051	14	41 / 77	1.628	97.5% KM (Chebyshev) UCL	0.66	4.5	NA	
Heptachlor	0.0054	210	38 / 79	20.88	97.5% KM (Chebyshev) UCL	0.66	33	NA	
Heptachlor epoxide	0.008	0.96	3 / 20	0.96	Max	1.7	NA	NA	
Methoxychlor	0.031	0.067	2 / 70	0.067	Max	10	690	NA	
Toxaphene	0.251	1633	32 / 80	175.4	97.5% KM (Chebyshev) UCL	11	250	NA	
Inorganic compounds									
Sulfate	160	1200	6 / 6	960	95% Student's-t UCL	NR	25000	NA	
Cyanide	1.8	1.8	1 / 20	1.8	Max	10	20	NA	
Antimony	20	30	2 / 20	30	Max	10	46	NA	
Arsenic	1.2	1502	67 / 77	269.2	97.5% KM (Chebyshev) UCL	41	**38**	>97	SB-B-02 (0-2), SB-173 (0-2), HA-106 (1-2'), MW-22 (0-1.5), SS-7 (0-2), SS-20, SB-15 (0-1.5), SS-05, SB-174 (0-2), MW-13 (0-0.5), SS-03, MW-101 (0-2), SB-G-0-2 (0-2), MW-12 (0-0.5), SB-H-0-2 (0-2), MW-21 (0-1.5), MW-14 (0-0.5), SB-F-0-2 (0-2), SB-142 (0-2), SB-142 (0-2), SS-10 (0-1)
Barium	28	2000	20 / 23	817	95% KM (Chebyshev) UCL	500	21000	NA	
Beryllium	1.1	1.8	3 / 20	1.8	Max	3	NA	NA	
Chromium	5.9	68	20 / 20	37.1	95% Approximate Gamma UCL	1200	NA	NA	
Copper	4.12	800	45 / 48	287.3	95% KM (Chebyshev) UCL	1500	3520	NA	
Lead	8.4	7450	55 / 56	990.4	Mean	400	**400**	>2490.92	HA-106 (1-2), SS-07 (0-2), SS-20 (0-1), SB-173 (0-2), SB-G-02, SB-H-02, SS-05 (0-1)
Mercury	0.1	0.325	2 / 23	0.325	Max	17	NA	NA	
Nickel	36	120	5 / 23	52	95% KM (t) UCL	420	3330	NA	
Silver	6.1	14	5 / 23	8.06	95% KM (t) UCL	10	109	NA	
Thallium	2.9	8.8	5 / 20	4.34	95% KM (t) UCL	10	10	NA	
Zinc	35.44	3200	48 / 48	487.5	95% H-UCL	2800	47900	NA	

mg/kg milligrams per kilograms
UCL Upper confidence limit of the arithmetic mean. Calculated with ProUCL Version 4.00.05.
EPC Exposure Point Concentration
Basis of EPC - Recommended UCL is listed if sufficient data to calculate the UCL. The mean is used for lead per modeling guidance. For detections less than 3 or when a high detection limit exceeds the maximum, the maximum concentration is listed.
Notification Concentration from Appendix I of the HSRA Rule.
Target RRS - Target Risk Reduction Standard for On-Site Surface Soil (Nonresidential exposures) from VRP RRS Summary Table.
Bolded RRS - The EPC exceeds the target RRS.
Goal to Achieve - Sample concentrations were ranked from low to high. The higher concentrations were removed from the data set and the UCL recalculated until the revised UCL was less than the target RRS. All samples greater than the indicated value were removed.
Removal of Soil Locations to Achieve EPC< RRS - Location of samples causing the EPC to exceed the target RRS.

PREPARED/DATE: LMS 11/29/10
CHECKED/DATE: MKB 11/29/10
REVISED/DATE: LWC 7/9/12
CHECKED/DATE: LMS 7/10/12

BFEL Subsurface Soil

Parameter	Mininum Detected, mg/kg	Maximum Detected, mg/kg	Frequency of Detection	Exposure Point Concentration (EPC), mg/kg	Basis for EPC	Notification Concentration, mg/kg	Maximum On-Site Subsurface RRS	Goal to Achieve EPC < RRS	Removal of Soil Locations to Achieve EPC < Target RRS
VOCs/SVOCs									
2,4-Dinitrotoluene	0.5286	0.5286	1 / 4	0.5286	Max	0.66	6.9	NA	
Benzo(a)anthracene	0.022	2.9	2 / 9	2.9	Max	5	870	NA	
Benzo(a)pyrene	0.0021	3.8	4 / 9	1.3	95% KM (t) UCL	1.6	290	NA	
Benzo(b)fluoranthene	0.0054	2.2	3 / 6	2.2	Max	5	2900	NA	
Benzo(b,k)fluoranthene	0.13	0.13	1 / 3	0.13	Max	5	2900	NA	
Benzo(ghi)pyrene	0.079	0.58	2 / 9	0.58	Max	500	2300	NA	
Benzo(k)fluoranthene	0.0021	1.3	3 / 6	1.3	Max	5	29000	NA	
Chrysene	0.056	5.5	3 / 9	1.98	95% KM (t) UCL	5	89000	NA	
Fluoranthene	0.33	11	2 / 9	11	Max	500	11000	NA	
Naphthalene	0.12	0.12	1 / 3	0.12	Max	100	NA	NA	
Phenanthrene	3.9	3.9	1 / 6	3.9	Max	110	110	NA	
Pyrene	0.32	16	2 / 9	16	Max	500	8400	NA	
Pesticides									
Aldrin	9.14	9.14	1 / 4	9.14	Max	0.66	13	NA	
alpha, beta, delta-BHC	0.005	44	49 / 90	4.06	97.5% KM (Chebyshev) UCL	0.66	**1.7**	>10.52	MW-8 (11-12.5)
alpha -BHC	0.00155	41	24 / 76	4.167	97.5% KM (Chebyshev) UCL	0.66	**1.7**	>6.8	SB-2 (18.5-20)
beta-BHC	0.00165	10.81	18 / 43	1.268	95% KM (t) UCL	0.66	5.8	NA	
Chlordane	0.0006462	191	74 / 179	8.383	97.5% KM (Chebyshev) UCL	9.2	87	NA	
DDD	0.00174	57	25 / 125	3.698	97.5% KM (Chebyshev) UCL	0.66	1800	NA	
DDE	0.00167	17	48 / 165	1.184	97.5% KM (Chebyshev) UCL	0.66	1200	NA	
DDT	0.0036	555	75 / 165	35.95	97.5% KM (Chebyshev) UCL	0.66	430	NA	
delta-bHC	0.0005933	0.693	13 / 43	0.0816	95% KM (t) UCL	25	25	NA	
Dieldrin	0.00189	6.6	21 / 125	0.638	97.5% KM (Chebyshev) UCL	0.66	4.5	NA	
gamma-BHC (Lindane)	0.0006881	19	62 / 166	0.713	95% KM (Chebyshev) UCL	0.66	4.5	NA	
Heptachlor	0.0005651	6.2	49 / 165	0.43	97.5% KM (Chebyshev) UCL	0.66	33	NA	
Methoxychlor	0.08	0.08	1 / 125	0.08	Max	10	690	NA	
Toxaphene	0.118	592	28 / 165	30.95	97.5% KM (Chebyshev) UCL	11	250	NA	
Inorganic compounds									
Sulfate	130	850	6 / 6	646	95% Student's-t UCL	NR	25000	NA	
Arsenic	0.68	3300	154 / 191	235.8	97.5% KM (Chebyshev) UCL	41	**41**	>170	HA-111 (5-6), SB-132 (12-13), SB-8 (13.5-15), MW-22 (3.5-5), MW-11 (13.5-15), SB-132 (3-5), MW-12 (3.5-5), SB-173 (4.5'), SB-2 (18.5-20), SB-132 (14-15), SB-15 (4.5-6), SB-A-8-10 (8-10), HA-106 (4-5), SB-13 (3.5-5), SB-H-3-5 (3-5), SB-B-3-5 (3-5), MW-15 (3.5-5), SB-174 (4.5'), MW-23 (4-5.5), MW-11 (8.5-10), SB-A-6-8 (6-8), MW-12 (8.5-10), SB-14 (14-15.5), MW-14 (13.5-15), SB-H-10-12 (10-12),MW-26 (9-10.5), SB-G-2-4 (2-4), SB-H-8-10 (8-10), MW-10 (8.5-10), MW-9 (13.5-15), MW-11 (3.5-5)
Barium	83	270	3 / 15	262	95% KM (t) UCL	500	21000	NA	
Beryllium	1	1	1 / 3	1	Max	3	NA	NA	
Chromium	2	18	3 / 3	18	Max	1200	NA	NA	
Copper	0.552	522.3	55 / 65	190.4	95% KM (Chebyshev) UCL	1500	3500	NA	
Lead	5.4	65300	49 / 58	1625	Mean	400	**400**	>3554.87	HA-111 (5-6), SB-H111-2-4 (2-4), SB-G-2-4 (2-4)
Mercury	0.26	0.26	1 / 15	0.26	Max	17	NA	NA	
Nickel	31.5	31.5	1 / 15	31.5	Max	420	3300	NA	
Zinc	13.84	1810	61 / 65	347	95% KM (Chebyshev) UCL	2800	48000	NA	

mg/kg milligrams per kilograms
UCL Upper confidence limit of the arithmetic mean. Calculated with ProUCL Version 4.00.05.
EPC Exposure Point Concentration
Basis of EPC - Recommended UCL is listed if sufficient data to calculate the UCL. The mean is used for lead per modeling guidance. For detections less than 3 or when a high detection limit exceeds the maximum, the maximum concentration is listed.
Notification Concentration from Appendix I of the HSRA Rule.
Target RRS - Target Risk Reduction Standard for Subsurface Soil (Nonresidential exposures) from VRP RRS Summary Table.
Bolded RRS - The EPC exceeds the target RRS.
Goal to Achieve - Sample concentrations were ranked from low to high. The higher concentrations were removed from the data set and the UCL recalculated until the revised UCL was less than the target RRS. All samples greater than the indicated value were removed.
Removal of Soil Locations to Achieve EPC< RRS - Location of samples causing the EPC to exceed the target RRS.

PREPARED/DATE: LMS 11/29/10
CHECKED/DATE: MKB 11/29/10
REVISED/DATE: LWC 7/9/12
CHECKED/DATE: LMS 7/10/12

CSX Surface Soil

Parameter	Mininum Detected	Maximum Detected	Frequency	EPC	Basis	Notification Concentration	Maximum On-Site Surface RRS	Goal	Removal
VOCs/SVOCs									
1,1,1-Trichloroethane	0.009	0.009	1 / 4	0.009	Max	5.44	20		
Acenaphthene	0.13	0.13	1 / 4	0.13	Max	300	--		
Anthracene	0.12	0.33	3 / 4	0.33	Max	500	500		
Benzo(a)anthracene	0.17	1.4	7 / 22	0.537	95% KM(t) UCL	5	5		
Benzo(a)pyrene	0.45	0.9	5 / 22	0.56	95% KM(t) UCL	1.6	1.6		
Benzo(b)fluoranthene	0.41	1.6	4 / 18	0.685	95% KM(t) UCL	5	5		
Benzo(b,k)fluoranthene	0.81	1.7	3 / 4	1.7	Max	5	5		
Benzo(ghi)pyrene	0.19	0.9	4 / 22	0.43	95% KM(t) UCL	500	2250		
Benzo(k)fluoranthene	0.41	0.41	2 / 18	0.41	Max	5	14		
Chrysene	0.19	1.6	7 / 22	0.585	95% KM(t) UCL	5	42		
Fluoranthene	0.32	3.3	11 / 23	1.11	95% KM(t) UCL	500	500		
Fluorene	0.14	0.14	1 / 4	0.14	Max	360	--		
Indeno(1,2,3-cd)pyrene	0.16	0.45	3 / 4	0.45	Max	5	5		
Naphthalene	0.11	0.12	2 / 4	0.12	Max	100	--		
Phenanthrene	0.42	0.66	4 / 15	0.484	95% KM(t) UCL	110	110		
Pyrene	0.27	2.7	11 / 23	0.983	95% KM(t) UCL	500	500		
Pesticides									
alpha, beta, delta-BHC	0.01	0.36	7 / 17	0.0977	95% KM(t) UCL	0.66	0.66		
alpha -BHC	0.01	0.023	3 / 29	0.023	Max	0.66	0.66		
beta-BHC	0.4	0.4	1 / 26	0.4	Max	0.66	0.66		
Chlordane	0.0042	67	12 / 46	16.48	99% KM (Chebyshev) UCL	9.2	**9.2**	>0.63	SS-10
DDD	0.0039	3.7	9 / 41	1.04	99% KM (Chebyshev) UCL	0.66	**0.84**	>0.096	SB-104
DDE	0.0031	24	19 / 48	2.841	95% KM (Chebyshev) UCL	0.66	**0.66**	>1.2	SS-10
DDT	0.014	11.1	27 / 49	1.606	95% KM (BCA) UCL	0.66	**0.85**	>2.4	MW-4, SS-10, SB-104, MW-6, SB-5, DW-2B, SS-17
delta-BHC	0.012	0.012	1 / 27	0.012	Max	25	25		
Dieldrin	0.0099	0.514	5 / 38	0.0636	95% KM (t) UCL	0.66	0.66		
gamma-BHC (Lindane)	0.015	1.78	13 / 44	0.167	95% KM (BCA) UCL	0.66	0.66		
Heptachlor	0.00902	0.3	9 / 48	0.0294	95% KM (t) UCL	0.66	0.66		
Heptachlor epoxide	0.0076	0.008	2 / 4	0.008	Max	1.7	--		
Toxaphene	0.071	190	8 / 48	11.4	95% KM (t) UCL	11	**11**	>11.6	SS-10
Inorganic compounds									
Antimony	37	37	1 / 4	37	Max	10	**4**		SS-06
Arsenic	1.2	1547	43 / 50	263	97.5% KM (Chebyshev) UCL	41	**20**	>75.7	MW-24, MW-25,SB-104, SB-156
Barium	99	1300	4 / 4	1300	Max	500	**1000**	>210	SS-06
Beryllium	1	1	1 / 4	1	Max	3	--		
Chromium	8.2	27	4 / 4	27	Max	1200	--		
Copper	20	820	4 / 4	820	Max	1500	**100**	>51	SS-06
Lead	0.0151	4000	29 / 29	264	Mean	400	**120**	>681	SS-06
Nickel	82	82	1 / 4	82	Max	420	**50**	Only Detection	SS-06
Silver	21	21	1 / 4	21	Max	10	**2**	Only Detection	SS-06
Thallium	6.3	6.3	1 / 4	6.3	Max	10	**2**	Only Detection	SS-06
Zinc	93	1500	4 / 4	1500	Max	2800	**292**	>200	SS-06

mg/kg milligrams per kilograms
UCL Upper confidence limit of the arithmetic mean. Calculated with ProUCL Version 4.00.05.
EPC Exposure Point Concentration
Basis of EPC - Recommended UCL is listed if sufficient data to calculate the UCL. The mean is used for lead per modeling guidance. For detections less than 3 or when a high detection limit exceeds the maximum, the maximum concentration is listed.
Notification Concentration from Appendix I of the HSRA Rule.
Target RRS - Target Risk Reduction Standard for Off-Site Surface Soil from VRP RRS Summary Table
Bolded RRS - The EPC exceeds the target RRS.
Goal to Achieve - Sample concentrations were ranked from low to high. The higher concentrations were removed from the data set and the UCL recalculated until the revised UCL was less than the target RRS. All samples greater than the indicated value were removed.
Removal of Soil Locations to Achieve EPC< RRS - Location of samples causing the EPC to exceed the target RRS.

Prepared/Date: LMS 2/3/2011
Checked/Date: MKB 2/10/11

CSX Subsurface Soil

Parameter	Mininum Detected	Maximum Detected	Frequency	EPC	Basis	Notification Concentration	Maximum Off-Site Subsurface RRS	Goal	Removal	
Pesticides										
alpha, beta, delta-BHC	0.0032	222	22 / 86	19.1	97.5% KM(Chebyshev) UCL	0.66	**0.66**	>6.5	DW-2B (16-17.5)	These samples are from 1980s.
alpha -BHC	0.0028	26	13 / 66	3.08	97.5% KM(Chebyshev) UCL	0.66	**0.66**	>4.4	SB-5 (18.5-20)	
Chlordane	0.0031	466	26 / 152	22.6	97.5% KM(Chebyshev) UCL	9.2	**9.2**	>1.6	DW-2B (16-17.5)	
DDD	0.0021	3.8	4 / 91	3.8	Max	0.66	15			
DDE	0.0045	78	25 / 153	3.78	97.5% KM(Chebyshev) UCL	0.66	11			
DDT	0.0022	774	43 / 153	38.1	97.5% KM(Chebyshev) UCL	0.66	**15**	>7.3	DW-2B (16-17.5)	
Dieldrin	0.065	0.22	2 / 92	0.22	Max	0.66	0.66			
gamma-BHC (Lindane)	0.005	33	28 / 153	1.92	97.5% KM(Chebyshev) UCL	0.66	**0.66**	>1.7	SB-5 (18.5-20), DW-2B (16-17.5)	
Heptachlor	0.0021	1.3	18 / 153	0.0503	95% KM (Chebyshev) UCL	0.66	0.66			
Toxaphene	0.077	700	12 / 152	35	97.5% KM(Chebyshev) UCL	11	**11**	>17.1	DW-2B (16-17.5)	
Inorganic compounds										
Arsenic	0.061	840	91 / 144	111	97.5% KM(Chebyshev) UCL	41	**41**	>133	14 PTS. With some at depth (All collected in 1980s).	
Lead	2.9	200	37 / 37	30.6	Mean	400	400			

mg/kg milligrams per kilograms
UCL Upper confidence limit of the arithmetic mean. Calculated with ProUCL Version 4.00.05.
EPC Exposure Point Concentration
Basis of EPC - Recommended UCL is listed if sufficient data to calculate the UCL. The mean is used for lead per modeling guidance. For detections less than 3 or when a high detection limit exceeds the maximum, the maximum concentration is listed.
Notification Concentration from Appendix I of the HSRA Rule.
Target RRS - Target Risk Reduction Standard for Off-Site Subsurface Soil from VRP RRS Summary Table
Bolded RRS - The EPC exceeds the target RRS.
Goal to Achieve - Sample concentrations were ranked from low to high. The higher concentrations were removed from the data set and the UCL recalculated until the revised UCL was less than the target RRS. All samples greater than the indicated value were removed.
Removal of Soil Locations to Achieve EPC< RRS - Location of samples causing the EPC to exceed the target RRS.

Prepared/Date: LMS 2/3/2011
Checked/Date: MKB 2/10/11

EPC AND UCL INPUTS AND OUTPUTS

ESTECH PROPERTY DATA

ProUCL Output for BFEL Surface Soils - Metals

Zinc

General Statistics

Number of Valid Observations	48	Number of Distinct Observations	45

Raw Statistics		Log-transformed Statistics	
Minimum	35.44	Minimum of Log Data	3.568
Maximum	3200	Maximum of Log Data	8.071
Mean	365.4	Mean of log Data	5.374
Geometric Mean	215.7	SD of log Data	0.983
Median	190.3		
SD	511		
Std. Error of Mean	73.75		
Coefficient of Variation	1.398		
Skewness	3.976		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.584	Shapiro Wilk Test Statistic	0.971
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
95% Student's-t UCL	489.1	95% H-UCL	487.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	593.9
95% Adjusted-CLT UCL (Chen-1995)	531.9	97.5% Chebyshev (MVUE) UCL	701.7
95% Modified-t UCL (Johnson-1978)	496.2	99% Chebyshev (MVUE) UCL	913.6

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.031	**Data appear Lognormal at 5% Significance Level**	
Theta Star	354.3		
MLE of Mean	365.4		
MLE of Standard Deviation	359.8		
nu star	99.01		
Approximate Chi Square Value (.05)	77.06	**Nonparametric Statistics**	
Adjusted Level of Significance	0.045	95% CLT UCL	486.7
Adjusted Chi Square Value	76.46	95% Jackknife UCL	489.1
		95% Standard Bootstrap UCL	486.6
Anderson-Darling Test Statistic	1.489	95% Bootstrap-t UCL	579.8
Anderson-Darling 5% Critical Value	0.777	95% Hall's Bootstrap UCL	992.2
Kolmogorov-Smirnov Test Statistic	0.141	95% Percentile Bootstrap UCL	503.4
Kolmogorov-Smirnov 5% Critical Value	0.131	95% BCA Bootstrap UCL	551.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	686.9
		97.5% Chebyshev(Mean, Sd) UCL	826
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1099
95% Approximate Gamma UCL (Use when n >= 40)	469.5		
95% Adjusted Gamma UCL (Use when n < 40)	473.2		

Potential UCL to Use **Use 95% H-UCL 487.5**

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Chromium

General Statistics

Number of Valid Observations	20	Number of Distinct Observations	15

Raw Statistics		Log-transformed Statistics	
Minimum	5.9	Minimum of Log Data	1.775
Maximum	68	Maximum of Log Data	4.22
Mean	28	Mean of log Data	3.098
Geometric Mean	22.16	SD of log Data	0.711
Median	21.5		
SD	19.68		
Std. Error of Mean	4.4		
Coefficient of Variation	0.703		
Skewness	1.004		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.95
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	35.6	95% H-UCL	41.15
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	48.88
95% Adjusted-CLT UCL (Chen-1995)	36.29	97.5% Chebyshev (MVUE) UCL	57.88
95% Modified-t UCL (Johnson-1978)	35.77	99% Chebyshev (MVUE) UCL	75.55

Gamma Distribution Test		Data Distribution
k star (bias corrected)	1.981	Data appear Gamma Distributed at 5% Significance Level
Theta Star	14.13	
MLE of Mean	28	
MLE of Standard Deviation	19.89	
nu star	79.25	
Approximate Chi Square Value (.05)	59.74	Nonparametric Statistics
Adjusted Level of Significance	0.038	95% CLT UCL 35.23
Adjusted Chi Square Value	58.4	95% Jackknife UCL 35.6
		95% Standard Bootstrap UCL 35.19
Anderson-Darling Test Statistic	0.543	95% Bootstrap-t UCL 36.66
Anderson-Darling 5% Critical Value	0.751	95% Hall's Bootstrap UCL 35.91
Kolmogorov-Smirnov Test Statistic	0.18	95% Percentile Bootstrap UCL 35.25
Kolmogorov-Smirnov 5% Critical Value	0.196	95% BCA Bootstrap UCL 36.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL 47.18
		97.5% Chebyshev(Mean, Sd) UCL 55.48
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 71.78
95% Approximate Gamma UCL (Use when n >= 40)	37.14	
95% Adjusted Gamma UCL (Use when n < 40)	37.99	

Potential UCL to Use — **Use 95% Approximate Gamma UCL 37.14**

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General UCL Statistics for Data Sets with Non-Detects

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Arsenic

General Statistics

Number of Valid Data	77	Number of Detected Data	67
Number of Distinct Detected Data	59	Number of Non-Detect Data	10
		Percent Non-Detects	12.99%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	1.2	Minimum Detected	0.182
Maximum Detected	1502	Maximum Detected	7.315
Mean of Detected	116.6	Mean of Detected	3.428
SD of Detected	248.5	SD of Detected	1.666
Minimum Non-Detect	0.59	Minimum Non-Detect	-0.528
Maximum Non-Detect	25	Maximum Non-Detect	3.219

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	43
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	34
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	55.84%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Lilliefors Test Statistic	0.321	Lilliefors Test Statistic	0.0838
5% Lilliefors Critical Value	0.108	5% Lilliefors Critical Value	0.108
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	102.1	Mean	3.092
SD	234.6	SD	1.849
95% DL/2 (t) UCL	146.6	95% H-Stat (DL/2) UCL	241.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	3.065
		SD in Log Scale	1.852
		Mean in Original Scale	101.9
		SD in Original Scale	234.7
		95% t UCL	146.4
		95% Percentile Bootstrap UCL	151.7
		95% BCA Bootstrap UCL	164.9
		95% H-UCL	237.1
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.469	**Data appear Lognormal at 5% Significance Level**	
Theta Star	248.9		
nu star	62.79		
A-D Test Statistic	2.531	**Nonparametric Statistics**	
5% A-D Critical Value	0.821	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.821	Mean	102
5% K-S Critical Value	0.116	SD	233.1
Data not Gamma Distributed at 5% Significance Level		SE of Mean	26.77
		95% KM (t) UCL	146.6
Assuming Gamma Distribution		95% KM (z) UCL	146
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	146.5
Minimum	0.000001	95% KM (bootstrap t) UCL	178.8
Maximum	1502	95% KM (BCA) UCL	148.2
Mean	101.5	95% KM (Percentile Bootstrap) UCL	151.2
Median	22	95% KM (Chebyshev) UCL	218.7
SD	234.9	97.5% KM (Chebyshev) UCL	269.2
k star	0.213	99% KM (Chebyshev) UCL	368.4
Theta star	476.9		
Nu star	32.77	**Potential UCLs to Use**	
AppChi2	20.69	**97.5% KM (Chebyshev) UCL**	**269.2**
95% Gamma Approximate UCL (Use when n >= 40)	160.8		
95% Adjusted Gamma UCL (Use when n < 40)	162.2		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Barium

General Statistics

Number of Valid Data	23	Number of Detected Data	20
Number of Distinct Detected Data	15	Number of Non-Detect Data	3
		Percent Non-Detects	13.04%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	28	Minimum Detected	3.332
Maximum Detected	2000	Maximum Detected	7.601
Mean of Detected	431.7	Mean of Detected	5.526
SD of Detected	484.9	SD of Detected	1.11
Minimum Non-Detect	500	Minimum Non-Detect	6.215
Maximum Non-Detect	500	Maximum Non-Detect	6.215

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.746	Shapiro Wilk Test Statistic	0.969
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	408	Mean	5.525
SD	454.9	SD	1.031
95% DL/2 (t) UCL	570.8	95% H-Stat (DL/2) UCL	751.1
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	76.89	Mean in Log Scale	5.449
SD	779.7	SD in Log Scale	1.066
95% MLE (t) UCL	356.1	Mean in Original Scale	395.6
95% MLE (Tiku) UCL	561.4	SD in Original Scale	461.3
		95% t UCL	560.7
		95% Percentile Bootstrap UCL	557.7
		95% BCA Bootstrap UCL	603.8
		95% H UCL	742.8

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**
k star (bias corrected)	0.933	**Data appear Gamma Distributed at 5% Significance Level**
Theta Star	462.5	
nu star	37.33	
A-D Test Statistic	0.562	**Nonparametric Statistics**
5% A-D Critical Value	0.767	Kaplan-Meier (KM) Method
K-S Test Statistic	0.767	Mean 395.5
5% K-S Critical Value	0.199	SD 451.3
Data appear Gamma Distributed at 5% Significance Level		SE of Mean 96.77
		95% KM (t) UCL 561.7
Assuming Gamma Distribution		95% KM (z) UCL 554.7
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL 561.2
Minimum	0.000001	95% KM (bootstrap t) UCL 657.6
Maximum	2000	95% KM (BCA) UCL 559.5
Mean	401.7	95% KM (Percentile Bootstrap) UCL 563.4
Median	185.6	95% KM (Chebyshev) UCL 817.4
SD	461.9	97.5% KM (Chebyshev) UCL 999.9
k star	0.455	99% KM (Chebyshev) UCL 1358
Theta star	883.2	
Nu star	20.92	**Potential UCLs to Use**
AppChi2	11.53	**95% KM (Chebyshev) UCL 817.4**
95% Gamma Approximate UCL (Use when n >= 40)	728.6	
95% Adjusted Gamma UCL (Use when n < 40)	762	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Copper

General Statistics

Number of Valid Data	48	Number of Detected Data	45
Number of Distinct Detected Data	44	Number of Non-Detect Data	3
		Percent Non-Detects	6.25%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	4.12	Minimum Detected	1.416
Maximum Detected	800	Maximum Detected	6.685
Mean of Detected	169.2	Mean of Detected	4.497
SD of Detected	203.8	SD of Detected	1.185
Minimum Non-Detect	50	Minimum Non-Detect	3.912
Maximum Non-Detect	250	Maximum Non-Detect	5.521

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	39
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.25%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.724	Shapiro Wilk Test Statistic	0.978
5% Shapiro Wilk Critical Value	0.945	5% Shapiro Wilk Critical Value	0.945
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	162.3	Mean	4.45
SD	199.4	SD	1.177
95% DL/2 (t) UCL	210.6	95% H-Stat (DL/2) UCL	264.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	4.433
		SD in Log Scale	1.18
		Mean in Original Scale	161
		SD in Original Scale	199.8
		95% t UCL	209.4
		95% Percentile Bootstrap UCL	212.5
		95% BCA Bootstrap UCL	219
		95% H-UCL	261.4
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.872	**Data appear Lognormal at 5% Significance Level**	
Theta Star	194		
nu star	78.52		
A-D Test Statistic	1.063	**Nonparametric Statistics**	
5% A-D Critical Value	0.781	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.781	Mean	161.4
5% K-S Critical Value	0.136	SD	197.7
Data not Gamma Distributed at 5% Significance Level		SE of Mean	28.89
		95% KM (t) UCL	209.9
Assuming Gamma Distribution		95% KM (z) UCL	208.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	209.8
Minimum	0.000001	95% KM (bootstrap t) UCL	216.4
Maximum	800	95% KM (BCA) UCL	212.3
Mean	160.6	95% KM (Percentile Bootstrap) UCL	209.4
Median	73.8	95% KM (Chebyshev) UCL	287.3
SD	200.3	97.5% KM (Chebyshev) UCL	341.8
k star	0.46	99% KM (Chebyshev) UCL	448.8
Theta star	349		
Nu star	44.19	**Potential UCLs to Use**	
AppChi2	29.94	**95% KM (Chebyshev) UCL**	**287.3**
95% Gamma Approximate UCL (Use when n >= 40)	237.1		
95% Adjusted Gamma UCL (Use when n < 40)	240		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Lead

General Statistics

Number of Valid Data	56	Number of Detected Data	55
Number of Distinct Detected Data	51	Number of Non-Detect Data	1
		Percent Non-Detects	1.79%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	8.4	Minimum Detected	2.128
Maximum Detected	7450	Maximum Detected	8.916
Mean of Detected	1008	Mean of Detected	5.407
SD of Detected	1770	SD of Detected	1.918
Minimum Non-Detect	38	Minimum Non-Detect	3.638
Maximum Non-Detect	38	Maximum Non-Detect	3.638

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Lilliefors Test Statistic	0.286	Lilliefors Test Statistic	0.0749
5% Lilliefors Critical Value	0.119	5% Lilliefors Critical Value	0.119
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	**990.1**	Mean	5.363
SD	1759	SD	1.928
95% DL/2 (t) UCL	1383	95% H-Stat (DL/2) UCL	3522
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	689.5	Mean in Log Scale	5.362
SD	2056	SD in Log Scale	1.93
95% MLE (t) UCL	1149	Mean in Original Scale	990.1
95% MLE (Tiku) UCL	1144	SD in Original Scale	1759
		95% t UCL	1383
		95% Percentile Bootstrap UCL	1400
		95% BCA Bootstrap UCL	1439
		95% H UCL	3534

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**
k star (bias corrected)	0.42	**Data appear Lognormal at 5% Significance Level**
Theta Star	2401	
nu star	46.17	
A-D Test Statistic	1.684	**Nonparametric Statistics**
5% A-D Critical Value	0.832	Kaplan-Meier (KM) Method
K-S Test Statistic	0.832	Mean 990
5% K-S Critical Value	0.128	SD 1743
Data not Gamma Distributed at 5% Significance Level		SE of Mean 235
		95% KM (t) UCL 1383
Assuming Gamma Distribution		95% KM (z) UCL 1377
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL 1383
Minimum	0.000001	95% KM (bootstrap t) UCL 1497
Maximum	7450	95% KM (BCA) UCL 1384
Mean	989.7	95% KM (Percentile Bootstrap) UCL 1385
Median	180.5	95% KM (Chebyshev) UCL 2015
SD	1759	97.5% KM (Chebyshev) UCL 2458
k star	0.357	99% KM (Chebyshev) UCL 3329
Theta star	2774	
Nu star	39.96	**Potential UCLs to Use**
AppChi2	26.47	97.5% KM (Chebyshev) UCL 2458
95% Gamma Approximate UCL (Use when n >= 40)	1494	
95% Adjusted Gamma UCL (Use when n < 40)	1510	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Nickel

General Statistics

Number of Valid Data	23	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	18
		Percent Non-Detects	78.26%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	36	Minimum Detected	3.584
Maximum Detected	120	Maximum Detected	4.787
Mean of Detected	72.6	Mean of Detected	4.202
SD of Detected	32.6	SD of Detected	0.462
Minimum Non-Detect	7	Minimum Non-Detect	1.946
Maximum Non-Detect	40	Maximum Non-Detect	3.689

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	82.61%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.972	Shapiro Wilk Test Statistic	0.995
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	24.28	Mean	2.699
SD	29.81	SD	0.939
95% DL/2 (t) UCL	34.95	95% H-Stat (DL/2) UCL	37.74
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	86.03	Mean in Log Scale	2.648
SD	25.38	SD in Log Scale	0.996
95% MLE (t) UCL	95.11	Mean in Original Scale	24.07
95% MLE (Tiku) UCL	107.5	SD in Original Scale	30.03
		95% t UCL	34.82
		95% Percentile Bootstrap UCL	35.43
		95% BCA Bootstrap UCL	37.6
		95% H UCL	39.62

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	2.599	**Data appear Normal at 5% Significance Level**	
Theta Star	27.94		
nu star	25.99		
A-D Test Statistic	0.166	**Nonparametric Statistics**	
5% A-D Critical Value	0.68	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.68	Mean	43.96
5% K-S Critical Value	0.358	SD	20.32
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	4.736
		95% KM (t) UCL	52.09
Assuming Gamma Distribution		95% KM (z) UCL	51.75
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	55.26
Minimum	0.000001	95% KM (bootstrap t) UCL	52.4
Maximum	120	95% KM (BCA) UCL	88
Mean	15.78	95% KM (Percentile Bootstrap) UCL	74.96
Median	0.000001	95% KM (Chebyshev) UCL	64.6
SD	33.63	97.5% KM (Chebyshev) UCL	73.53
k star	0.0874	99% KM (Chebyshev) UCL	91.08
Theta star	180.6		
Nu star	4.02	**Potential UCLs to Use**	
AppChi2	0.73	**95% KM (t) UCL**	**52.09**
95% Gamma Approximate UCL (Use when n >= 40)	86.95	95% KM (Percentile Bootstrap) UCL	74.96
95% Adjusted Gamma UCL (Use when n < 40)	99.45		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Silver

General Statistics

Number of Valid Data	23	Number of Detected Data	5
Number of Distinct Detected Data	4	Number of Non-Detect Data	18
		Percent Non-Detects	78.26%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	6.1	Minimum Detected	1.808
Maximum Detected	14	Maximum Detected	2.639
Mean of Detected	10.62	Mean of Detected	2.305
SD of Detected	3.751	SD of Detected	0.394
Minimum Non-Detect	0.2	Minimum Non-Detect	-1.609
Maximum Non-Detect	4	Maximum Non-Detect	1.386

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	78.26%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk Test Statistic	0.791
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.77	Mean	-0.021
SD	4.535	SD	1.351
95% DL/2 (t) UCL	4.393	95% H-Stat (DL/2) UCL	5.824
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	10.94	Mean in Log Scale	1.073
SD	3.355	SD in Log Scale	0.859
95% MLE (t) UCL	12.14	Mean in Original Scale	4.195
95% MLE (Tiku) UCL	13.49	SD in Original Scale	3.979
		95% t UCL	5.62
		95% Percentile Bootstrap UCL	5.634
		95% BCA Bootstrap UCL	5.791
		95% H UCL	6.501

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	3.641	**Data appear Normal at 5% Significance Level**	
Theta Star	2.917		
nu star	36.41		
A-D Test Statistic	0.676	**Nonparametric Statistics**	
5% A-D Critical Value	0.679	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.679	Mean	7.083
5% K-S Critical Value	0.358	SD	2.434
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.567
		95% KM (t) UCL	8.057
Assuming Gamma Distribution		95% KM (z) UCL	8.016
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.941
Minimum	0.000001	95% KM (bootstrap t) UCL	8.019
Maximum	14	95% KM (BCA) UCL	13.09
Mean	2.337	95% KM (Percentile Bootstrap) UCL	13.04
Median	0.000001	95% KM (Chebyshev) UCL	9.556
SD	4.744	97.5% KM (Chebyshev) UCL	10.63
k star	0.0977	99% KM (Chebyshev) UCL	12.73
Theta star	23.93		
Nu star	4.492	**Potential UCLs to Use**	
AppChi2	0.925	**95% KM (t) UCL**	**8.057**
95% Gamma Approximate UCL (Use when n >= 40)	11.35	95% KM (Percentile Bootstrap) UCL	13.04
95% Adjusted Gamma UCL (Use when n < 40)	12.85		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

Thallium

General Statistics

Number of Valid Data	20	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	15
		Percent Non-Detects	75.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.9	Minimum Detected	1.065
Maximum Detected	8.8	Maximum Detected	2.175
Mean of Detected	5.8	Mean of Detected	1.68
SD of Detected	2.405	SD of Detected	0.456
Minimum Non-Detect	0.6	Minimum Non-Detect	-0.511
Maximum Non-Detect	1	Maximum Non-Detect	0

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk Test Statistic	0.942
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.725	Mean	-0.343
SD	2.655	SD	1.225
95% DL/2 (t) UCL	2.751	95% H-Stat (DL/2) UCL	3.469
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	5.921	Mean in Log Scale	0.284
SD	2.151	SD in Log Scale	0.975
95% MLE (t) UCL	6.753	Mean in Original Scale	2.166
95% MLE (Tiku) UCL	7.577	SD in Original Scale	2.455
		95% t UCL	3.115
		95% Percentile Bootstrap UCL	3.091
		95% BCA Bootstrap UCL	3.211
		95% H UCL	3.826

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.761	**Data appear Normal at 5% Significance Level**	
Theta Star	2.101		
nu star	27.61		
A-D Test Statistic	0.265	**Nonparametric Statistics**	
5% A-D Critical Value	0.68	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.68	Mean	3.625
5% K-S Critical Value	0.358	SD	1.653
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.413
		95% KM (t) UCL	4.34
Assuming Gamma Distribution		95% KM (z) UCL	4.305
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.386
Minimum	0.000001	95% KM (bootstrap t) UCL	4.307
Maximum	8.8	95% KM (BCA) UCL	7.36
Mean	1.45	95% KM (Percentile Bootstrap) UCL	6.69
Median	0.000001	95% KM (Chebyshev) UCL	5.427
SD	2.803	97.5% KM (Chebyshev) UCL	6.206
k star	0.102	99% KM (Chebyshev) UCL	7.738
Theta star	14.21		
Nu star	4.08	**Potential UCLs to Use**	
AppChi2	0.754	**95% KM (t) UCL**	**4.34**
95% Gamma Approximate UCL (Use when n >= 40)	7.85	95% KM (Percentile Bootstrap) UCL	6.69
95% Adjusted Gamma UCL (Use when n < 40)	9.077		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMW 7/10/12

ProUCL Output for BFEL Surface Soils- Pesticides

Aldrin

General Statistics

Number of Valid Data	22	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	18
		Percent Non-Detects	81.82%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.039	Minimum Detected	-3.244
Maximum Detected	140	Maximum Detected	4.942
Mean of Detected	37.48	Mean of Detected	1.01
SD of Detected	68.45	SD of Detected	3.443
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298
Maximum Non-Detect	95	Maximum Non-Detect	4.554

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	21
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.45%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.675	Shapiro Wilk Test Statistic	0.998
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.236	Mean	-1.3
SD	30.91	SD	2.777
95% DL/2 (t) UCL	20.57	95% H-Stat (DL/2) UCL	377.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.753
		SD in Log Scale	4.495
		Mean in Original Scale	6.816
		SD in Original Scale	29.8
		95% t UCL	17.75
		95% Percentile Bootstrap UCL	19.31
		95% BCA Bootstrap UCL	26.3
		95% H-UCL	152201

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.234	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	160.3		
nu star	1.871		
A-D Test Statistic	0.252	**Nonparametric Statistics**	
5% A-D Critical Value	0.713	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.713	Mean	6.879
5% K-S Critical Value	0.42	SD	29.11
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.167
		95% KM (t) UCL	19.21
Assuming Gamma Distribution		95% KM (z) UCL	18.67
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	17.08
Minimum	0.000001	95% KM (bootstrap t) UCL	111
Maximum	140	95% KM (BCA) UCL	140
Mean	6.815	95% KM (Percentile Bootstrap) UCL	26.44
Median	0.000001	95% KM (Chebyshev) UCL	38.12
SD	29.81	97.5% KM (Chebyshev) UCL	51.64
k star	0.0868	99% KM (Chebyshev) UCL	78.19
Theta star	78.53		
Nu star	3.818	**Potential UCLs to Use**	
AppChi2	0.651	**95% KM (t) UCL**	**19.21**
95% Gamma Approximate UCL (Use when n >= 40)	39.96		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Alpha, Beta, Delta-BHC

General Statistics

Number of Valid Data	29	Number of Detected Data	26
Number of Distinct Detected Data	26	Number of Non-Detect Data	3
		Percent Non-Detects	10.34%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.006	Minimum Detected	-5.116
Maximum Detected	40.7	Maximum Detected	3.706
Mean of Detected	4.59	Mean of Detected	-0.466
SD of Detected	9.274	SD of Detected	2.531
Minimum Non-Detect	0.0005	Minimum Non-Detect	-7.601
Maximum Non-Detect	0.001	Maximum Non-Detect	-6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	26
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	10.34%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.54	Shapiro Wilk Test Statistic	0.953
5% Shapiro Wilk Critical Value	0.92	5% Shapiro Wilk Critical Value	0.92
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.115	Mean	-1.252
SD	8.878	SD	3.358
95% DL/2 (t) UCL	6.919	95% H-Stat (DL/2) UCL	3966
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.458	Mean in Log Scale	-1.063
SD	9.375	SD in Log Scale	2.989
95% MLE (t) UCL	6.419	Mean in Original Scale	4.115
95% MLE (Tiku) UCL	6.212	SD in Original Scale	8.878
		95% t UCL	6.92
		95% Percentile Bootstrap UCL	6.998
		95% BCA Bootstrap UCL	8.235
		95% H UCL	683.1
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.326	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	14.08		
nu star	16.95		
A-D Test Statistic	0.437	**Nonparametric Statistics**	
5% A-D Critical Value	0.843	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.843	Mean	4.116
5% K-S Critical Value	0.185	SD	8.723
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.652
		95% KM (t) UCL	6.926
Assuming Gamma Distribution		95% KM (z) UCL	6.833
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.92
Minimum	0.000001	95% KM (bootstrap t) UCL	12.34
Maximum	40.7	95% KM (BCA) UCL	6.97
Mean	4.115	95% KM (Percentile Bootstrap) UCL	7.28
Median	0.406	95% KM (Chebyshev) UCL	11.32
SD	8.878	97.5% KM (Chebyshev) UCL	14.43
k star	0.222	99% KM (Chebyshev) UCL	20.55
Theta star	18.54		
Nu star	12.88	**Potential UCLs to Use**	
AppChi2	5.809	**95% KM (Chebyshev) UCL**	**11.32**
95% Gamma Approximate UCL (Use when n >= 40)	9.121		
95% Adjusted Gamma UCL (Use when n < 40)	9.587		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

alpha-BHC

General Statistics

Number of Valid Data	48	Number of Detected Data	25
Number of Distinct Detected Data	24	Number of Non-Detect Data	23
		Percent Non-Detects	47.92%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.005	Minimum Detected	-5.298
Maximum Detected	960	Maximum Detected	6.867
Mean of Detected	39.68	Mean of Detected	-1.724
SD of Detected	191.8	SD of Detected	2.68
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	1.7	Maximum Non-Detect	0.531

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	44
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.67%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.215	Shapiro Wilk Test Statistic	0.87
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	20.73	Mean	-3.266
SD	138.5	SD	3.041
95% DL/2 (t) UCL	54.27	95% H-Stat (DL/2) UCL	37.53
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.29
		SD in Log Scale	3.48
		Mean in Original Scale	20.67
		SD in Original Scale	138.5
		95% t UCL	54.21
		95% Percentile Bootstrap UCL	60.46
		95% BCA Bootstrap UCL	100.4
		95% H-UCL	109.7
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.153	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	260		
nu star	7.632		
A-D Test Statistic	5.186	**Nonparametric Statistics**	
5% A-D Critical Value	0.92	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.92	Mean	20.68
5% K-S Critical Value	0.195	SD	137
Data not Gamma Distributed at 5% Significance Level		SE of Mean	20.19
		95% KM (t) UCL	54.55
Assuming Gamma Distribution		95% KM (z) UCL	53.88
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	54.22
Minimum	0.000001	95% KM (bootstrap t) UCL	3029
Maximum	960	95% KM (BCA) UCL	60.87
Mean	20.67	95% KM (Percentile Bootstrap) UCL	60.66
Median	0.006	95% KM (Chebyshev) UCL	108.7
SD	138.5	97.5% KM (Chebyshev) UCL	146.8
k star	0.0881	99% KM (Chebyshev) UCL	221.6
Theta star	234.5		
Nu star	8.46	**Potential UCLs to Use**	
AppChi2	3.004	**99% KM (Chebyshev) UCL**	**221.6**
95% Gamma Approximate UCL (Use when n >= 40)	58.2		
95% Adjusted Gamma UCL (Use when n < 40)	60.21		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

beta-BHC

General Statistics

Number of Valid Data	41	Number of Detected Data	23
Number of Distinct Detected Data	23	Number of Non-Detect Data	18
		Percent Non-Detects	43.90%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0092	Minimum Detected	-4.689
Maximum Detected	930	Maximum Detected	6.835
Mean of Detected	47.29	Mean of Detected	-0.283
SD of Detected	193.8	SD of Detected	2.789
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	5.2	Maximum Non-Detect	1.649

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	36
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	87.80%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.263	Shapiro Wilk Test Statistic	0.955
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	26.61	Mean	-2.531
SD	145.6	SD	3.651
95% DL/2 (t) UCL	64.91	95% H-Stat (DL/2) UCL	2130
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.016
		SD in Log Scale	3.854
		Mean in Original Scale	26.53
		SD in Original Scale	145.7
		95% t UCL	64.84
		95% Percentile Bootstrap UCL	71.55
		95% BCA Bootstrap UCL	97.73
		95% H-UCL	4137
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.186	**Data appear Lognormal at 5% Significance Level**	
Theta Star	254.2		
nu star	8.557		
A-D Test Statistic	2.952	**Nonparametric Statistics**	
5% A-D Critical Value	0.902	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.902	Mean	26.55
5% K-S Critical Value	0.202	SD	143.9
Data not Gamma Distributed at 5% Significance Level		SE of Mean	22.97
		95% KM (t) UCL	65.23
Assuming Gamma Distribution		95% KM (z) UCL	64.33
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	64.84
Minimum	0.000001	95% KM (bootstrap t) UCL	1313
Maximum	930	95% KM (BCA) UCL	71.35
Mean	26.53	95% KM (Percentile Bootstrap) UCL	71.79
Median	0.0349	95% KM (Chebyshev) UCL	126.7
SD	145.7	97.5% KM (Chebyshev) UCL	170
k star	0.0968	99% KM (Chebyshev) UCL	255.1
Theta star	274		
Nu star	7.941	**Potential UCLs to Use**	
AppChi2	2.701	**99% KM (Chebyshev) UCL**	**255.1**
95% Gamma Approximate UCL (Use when n >= 40)	78		
95% Adjusted Gamma UCL (Use when n < 40)	81.33		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Chlordane

General Statistics

Number of Valid Data	83	Number of Detected Data	51
Number of Distinct Detected Data	50	Number of Non-Detect Data	32
		Percent Non-Detects	38.55%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.012	Minimum Detected	-4.424
Maximum Detected	390	Maximum Detected	5.966
Mean of Detected	27.68	Mean of Detected	-0.115
SD of Detected	80.03	SD of Detected	2.862
Minimum Non-Detect	0.0021	Minimum Non-Detect	-6.166
Maximum Non-Detect	25.7	Maximum Non-Detect	3.246

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	77
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.77%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Lilliefors Test Statistic	0.435	Lilliefors Test Statistic	0.12
5% Lilliefors Critical Value	0.124	5% Lilliefors Critical Value	0.124
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	17.94	Mean	-1.051
SD	63.74	SD	3.438
95% DL/2 (t) UCL	29.58	95% H-Stat (DL/2) UCL	956.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.89
		SD in Log Scale	3.436
		Mean in Original Scale	17.04
		SD in Original Scale	63.94
		95% t UCL	28.71
		95% Percentile Bootstrap UCL	29.48
		95% BCA Bootstrap UCL	32.93
		95% H-UCL	410.4
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.213	**Data appear Lognormal at 5% Significance Level**	
Theta Star	130.1		
nu star	21.7		
A-D Test Statistic	3.978	**Nonparametric Statistics**	
5% A-D Critical Value	0.902	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.902	Mean	17.16
5% K-S Critical Value	0.137	SD	63.53
Data not Gamma Distributed at 5% Significance Level		SE of Mean	7.043
		95% KM (t) UCL	28.87
Assuming Gamma Distribution		95% KM (z) UCL	28.74
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	28.83
Minimum	0.000001	95% KM (bootstrap t) UCL	38.05
Maximum	390	95% KM (BCA) UCL	30.69
Mean	17.19	95% KM (Percentile Bootstrap) UCL	29.3
Median	0.089	95% KM (Chebyshev) UCL	47.86
SD	63.92	97.5% KM (Chebyshev) UCL	61.14
k star	0.105	99% KM (Chebyshev) UCL	87.23
Theta star	163.3		
Nu star	17.47	**Potential UCLs to Use**	
AppChi2	9.011	**97.5% KM (Chebyshev) UCL**	**61.14**
95% Gamma Approximate UCL (Use when n >= 40)	33.33		
95% Adjusted Gamma UCL (Use when n < 40)	33.73		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

DDD

General Statistics

Number of Valid Data	69	Number of Detected Data	29
Number of Distinct Detected Data	29	Number of Non-Detect Data	40
		Percent Non-Detects	57.97%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.013	Minimum Detected	-4.343
Maximum Detected	550	Maximum Detected	6.31
Mean of Detected	37.47	Mean of Detected	0.1
SD of Detected	115.7	SD of Detected	2.79
Minimum Non-Detect	0.0021	Minimum Non-Detect	-6.166
Maximum Non-Detect	7.8	Maximum Non-Detect	2.054

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	63
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.30%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.377	Shapiro Wilk Test Statistic	0.951
5% Shapiro Wilk Critical Value	0.926	5% Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	15.82	Mean	-2.714
SD	76.55	SD	3.291
95% DL/2 (t) UCL	31.19	95% H-Stat (DL/2) UCL	74.76
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.157
		SD in Log Scale	4.392
		Mean in Original Scale	15.75
		SD in Original Scale	76.57
		95% t UCL	31.12
		95% Percentile Bootstrap UCL	32.45
		95% BCA Bootstrap UCL	39.08
		95% H-UCL	4840
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.209	**Data appear Lognormal at 5% Significance Level**	
Theta Star	179.2		
nu star	12.13		
A-D Test Statistic	2.819	**Nonparametric Statistics**	
5% A-D Critical Value	0.894	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.894	Mean	15.76
5% K-S Critical Value	0.18	SD	76.01
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.312
		95% KM (t) UCL	31.29
Assuming Gamma Distribution		95% KM (z) UCL	31.08
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	31.13
Minimum	0.000001	95% KM (bootstrap t) UCL	86.3
Maximum	550	95% KM (BCA) UCL	33.25
Mean	15.75	95% KM (Percentile Bootstrap) UCL	31.9
Median	0.000001	95% KM (Chebyshev) UCL	56.35
SD	76.57	97.5% KM (Chebyshev) UCL	73.92
k star	0.0843	99% KM (Chebyshev) UCL	108.4
Theta star	186.9		
Nu star	11.63	**Potential UCLs to Use**	
AppChi2	4.985	**97.5% KM (Chebyshev) UCL**	**73.92**
95% Gamma Approximate UCL (Use when n >= 40)	36.74		
95% Adjusted Gamma UCL (Use when n < 40)	37.44		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

DDE

General Statistics

Number of Valid Data	79	Number of Detected Data	63
Number of Distinct Detected Data	62	Number of Non-Detect Data	16
		Percent Non-Detects	20.25%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0029	Minimum Detected	-5.843
Maximum Detected	94	Maximum Detected	4.543
Mean of Detected	5.909	Mean of Detected	-0.263
SD of Detected	15.13	SD of Detected	2.382
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	2.6	Maximum Non-Detect	0.956

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	58
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	21
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	73.42%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Lilliefors Test Statistic	0.348	Lilliefors Test Statistic	0.0694
5% Lilliefors Critical Value	0.112	5% Lilliefors Critical Value	0.112
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.744	Mean	-1.215
SD	13.69	SD	3.044
95% DL/2 (t) UCL	7.308	95% H-Stat (DL/2) UCL	162.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.187
		SD in Log Scale	2.865
		Mean in Original Scale	4.716
		SD in Original Scale	13.7
		95% t UCL	7.282
		95% Percentile Bootstrap UCL	7.472
		95% BCA Bootstrap UCL	8.036
		95% H-UCL	82.4

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**
k star (bias corrected)	0.327	**Data Follow Appr. Gamma Distribution at 5% Significance Level**
Theta Star	18.06	
nu star	41.23	
A-D Test Statistic	1.554	**Nonparametric Statistics**
5% A-D Critical Value	0.856	Kaplan-Meier (KM) Method
K-S Test Statistic	0.856	Mean 4.723
5% K-S Critical Value	0.121	SD 13.61
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean 1.544
		95% KM (t) UCL 7.293
Assuming Gamma Distribution		95% KM (z) UCL 7.263
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL 7.289
Minimum	0.000001	95% KM (bootstrap t) UCL 9.901
Maximum	94	95% KM (BCA) UCL 7.646
Mean	4.712	95% KM (Percentile Bootstrap) UCL 7.415
Median	0.46	95% KM (Chebyshev) UCL 11.45
SD	13.7	97.5% KM (Chebyshev) UCL 14.36
k star	0.168	99% KM (Chebyshev) UCL 20.08
Theta star	28.01	
Nu star	26.58	**Potential UCLs to Use**
AppChi2	15.83	**95% KM (Chebyshev) UCL 11.45**
95% Gamma Approximate UCL (Use when n >= 40)	7.914	
95% Adjusted Gamma UCL (Use when n < 40)	7.992	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

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DDT

General Statistics

Number of Valid Data	79	Number of Detected Data	68
Number of Distinct Detected Data	66	Number of Non-Detect Data	11
		Percent Non-Detects	13.92%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.003	Minimum Detected	-5.809
Maximum Detected	9100	Maximum Detected	9.116
Mean of Detected	297.9	Mean of Detected	1.906
SD of Detected	1224	SD of Detected	3.169
Minimum Non-Detect	0.0021	Minimum Non-Detect	-6.166
Maximum Non-Detect	0.02	Maximum Non-Detect	-3.912

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	66
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	16.46%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Lilliefors Test Statistic	0.41	Lilliefors Test Statistic	0.0424
5% Lilliefors Critical Value	0.107	5% Lilliefors Critical Value	0.107
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	256.5	Mean	0.757
SD	1139	SD	4.119
95% DL/2 (t) UCL	469.8	95% H-Stat (DL/2) UCL	202494
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	96.95	Mean in Log Scale	0.942
SD	1258	SD in Log Scale	3.806
95% MLE (t) UCL	332.6	Mean in Original Scale	256.5
95% MLE (Tiku) UCL	321.1	SD in Original Scale	1139
		95% t UCL	469.8
		95% Percentile Bootstrap UCL	488.3
		95% BCA Bootstrap UCL	619
		95% H UCL	46351

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**
k star (bias corrected)	0.196	**Data appear Lognormal at 5% Significance Level**
Theta Star	1519	
nu star	26.67	
A-D Test Statistic	4.37	**Nonparametric Statistics**
5% A-D Critical Value	0.914	Kaplan-Meier (KM) Method
K-S Test Statistic	0.914	Mean 256.5
5% K-S Critical Value	0.12	SD 1132
Data not Gamma Distributed at 5% Significance Level		SE of Mean 128.3
		95% KM (t) UCL 470
Assuming Gamma Distribution		95% KM (z) UCL 467.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL 469.8
Minimum	0.000001	95% KM (bootstrap t) UCL 819.7
Maximum	9100	95% KM (BCA) UCL 516.8
Mean	256.5	95% KM (Percentile Bootstrap) UCL 486.4
Median	4.028	95% KM (Chebyshev) UCL 815.7
SD	1139	97.5% KM (Chebyshev) UCL 1058
k star	0.137	99% KM (Chebyshev) UCL 1533
Theta star	1867	
Nu star	21.7	**Potential UCLs to Use**
AppChi2	12.11	**97.5% KM (Chebyshev) UCL 1058**
95% Gamma Approximate UCL (Use when n >= 40)	459.4	
95% Adjusted Gamma UCL (Use when n < 40)	464.5	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
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delta-BHC

General Statistics

Number of Valid Data	43	Number of Detected Data	14
Number of Distinct Detected Data	14	Number of Non-Detect Data	29
		Percent Non-Detects	67.44%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.003	Minimum Detected	-5.809
Maximum Detected	69	Maximum Detected	4.234
Mean of Detected	7.887	Mean of Detected	-1.676
SD of Detected	19.52	SD of Detected	3.276
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	1.7	Maximum Non-Detect	0.531

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	39
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.70%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.48	Shapiro Wilk Test Statistic	0.931
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.707	Mean	-3.26
SD	11.46	SD	3.104
95% DL/2 (t) UCL	5.645	95% H-Stat (DL/2) UCL	60.37
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-6.692
		SD in Log Scale	4.407
		Mean in Original Scale	2.569
		SD in Original Scale	11.49
		95% t UCL	5.515
		95% Percentile Bootstrap UCL	5.613
		95% BCA Bootstrap UCL	7.478
		95% H-UCL	3033

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.203	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	38.94		
nu star	5.671		
A-D Test Statistic	1.066	**Nonparametric Statistics**	
5% A-D Critical Value	0.874	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.874	Mean	2.581
5% K-S Critical Value	0.253	SD	11.35
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	1.796
		95% KM (t) UCL	5.602
Assuming Gamma Distribution		95% KM (z) UCL	5.535
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.526
Minimum	0.000001	95% KM (bootstrap t) UCL	32.88
Maximum	69	95% KM (BCA) UCL	5.799
Mean	2.579	95% KM (Percentile Bootstrap) UCL	5.658
Median	0.000001	95% KM (Chebyshev) UCL	10.41
SD	11.48	97.5% KM (Chebyshev) UCL	13.8
k star	0.0894	99% KM (Chebyshev) UCL	20.45
Theta star	28.84		
Nu star	7.69	**Potential UCLs to Use**	
AppChi2	2.557	**95% KM (t) UCL**	**5.602**
95% Gamma Approximate UCL (Use when n >= 40)	7.757		
95% Adjusted Gamma UCL (Use when n < 40)	8.079		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Dieldrin

General Statistics

Number of Valid Data	70	Number of Detected Data	26
Number of Distinct Detected Data	25	Number of Non-Detect Data	44
		Percent Non-Detects	62.86%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0052	Minimum Detected	-5.259
Maximum Detected	590	Maximum Detected	6.38
Mean of Detected	26.37	Mean of Detected	-0.849
SD of Detected	116	SD of Detected	2.453
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	3.3	Maximum Non-Detect	1.194

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	67
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.71%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.244	Shapiro Wilk Test Statistic	0.924
5% Shapiro Wilk Critical Value	0.92	5% Shapiro Wilk Critical Value	0.92
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.909	Mean	-3.023
SD	70.95	SD	2.861
95% DL/2 (t) UCL	24.05	95% H-Stat (DL/2) UCL	9.167
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.691
		SD in Log Scale	3.628
		Mean in Original Scale	9.797
		SD in Original Scale	70.97
		95% t UCL	23.94
		95% Percentile Bootstrap UCL	26.56
		95% BCA Bootstrap UCL	37.39
		95% H-UCL	46.57
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.186	**Data appear Lognormal at 5% Significance Level**	
Theta Star	141.8		
nu star	9.673		
A-D Test Statistic	4.48	**Nonparametric Statistics**	
5% A-D Critical Value	0.902	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.902	Mean	9.813
5% K-S Critical Value	0.19	SD	70.46
Data not Gamma Distributed at 5% Significance Level		SE of Mean	8.588
		95% KM (t) UCL	24.13
Assuming Gamma Distribution		95% KM (z) UCL	23.94
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	23.94
Minimum	0.000001	95% KM (bootstrap t) UCL	1043
Maximum	590	95% KM (BCA) UCL	26.65
Mean	9.794	95% KM (Percentile Bootstrap) UCL	26.51
Median	0.000001	95% KM (Chebyshev) UCL	47.25
SD	70.97	97.5% KM (Chebyshev) UCL	63.44
k star	0.0809	99% KM (Chebyshev) UCL	95.26
Theta star	121.1		
Nu star	11.32	**Potential UCLs to Use**	
AppChi2	4.783	**97.5% KM (Chebyshev) UCL**	**63.44**
95% Gamma Approximate UCL (Use when n >= 40)	23.18		
95% Adjusted Gamma UCL (Use when n < 40)	23.62		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Endrin

General Statistics

Number of Valid Data	45	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	41
		Percent Non-Detects	91.11%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.15	Minimum Detected	-1.897
Maximum Detected	38	Maximum Detected	3.638
Mean of Detected	10.08	Mean of Detected	0.15
SD of Detected	18.64	SD of Detected	2.619
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	40	Maximum Non-Detect	3.689

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	45
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.665	Shapiro Wilk Test Statistic	0.868
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.604	Mean	-2.661
SD	6.301	SD	2.349
95% DL/2 (t) UCL	3.183	95% H-Stat (DL/2) UCL	4.873
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-10.07
		SD in Log Scale	4.645
		Mean in Original Scale	0.896
		SD in Original Scale	5.665
		95% t UCL	2.315
		95% Percentile Bootstrap UCL	2.582
		95% BCA Bootstrap UCL	4.227
		95% H-UCL	478.1
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.246	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	41		
nu star	1.966		
A-D Test Statistic	0.494	**Nonparametric Statistics**	
5% A-D Critical Value	0.702	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.702	Mean	1.057
5% K-S Critical Value	0.417	SD	5.641
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.982
		95% KM (t) UCL	2.707
Assuming Gamma Distribution		95% KM (z) UCL	2.672
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.494
Minimum	0.000001	95% KM (bootstrap t) UCL	18.24
Maximum	38	95% KM (BCA) UCL	38
Mean	0.896	95% KM (Percentile Bootstrap) UCL	4.597
Median	0.000001	95% KM (Chebyshev) UCL	5.338
SD	5.665	97.5% KM (Chebyshev) UCL	7.19
k star	0.0784	99% KM (Chebyshev) UCL	10.83
Theta star	11.43		
Nu star	7.055	**Potential UCLs to Use**	
AppChi2	2.201	**95% KM (t) UCL**	**2.707**
95% Gamma Approximate UCL (Use when n >= 40)	2.871		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
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gamma-BHC (Lindane)

General Statistics

Number of Valid Data	77	Number of Detected Data	41
Number of Distinct Detected Data	39	Number of Non-Detect Data	36
		Percent Non-Detects	46.75%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0051	Minimum Detected	-5.279
Maximum Detected	14	Maximum Detected	2.639
Mean of Detected	0.792	Mean of Detected	-1.745
SD of Detected	2.193	SD of Detected	1.859
Minimum Non-Detect	0.0005	Minimum Non-Detect	-7.601
Maximum Non-Detect	95	Maximum Non-Detect	4.554

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	77
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.348	Shapiro Wilk Test Statistic	0.971
5% Shapiro Wilk Critical Value	0.941	5% Shapiro Wilk Critical Value	0.941
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.079	Mean	-3.191
SD	5.604	SD	2.794
95% DL/2 (t) UCL	2.142	95% H-Stat (DL/2) UCL	8.609
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.51
		SD in Log Scale	2.465
		Mean in Original Scale	0.426
		SD in Original Scale	1.639
		95% t UCL	0.737
		95% Percentile Bootstrap UCL	0.773
		95% BCA Bootstrap UCL	0.967
		95% H-UCL	1.956
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.415	Data appear Lognormal at 5% Significance Level	
Theta Star	1.908		
nu star	34.04		
A-D Test Statistic	1.183	**Nonparametric Statistics**	
5% A-D Critical Value	0.829	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.829	Mean	0.439
5% K-S Critical Value	0.147	SD	1.638
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.19
		95% KM (t) UCL	0.757
Assuming Gamma Distribution		95% KM (z) UCL	0.753
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.754
Minimum	0.000001	95% KM (bootstrap t) UCL	1.403
Maximum	14	95% KM (BCA) UCL	0.852
Mean	0.431	95% KM (Percentile Bootstrap) UCL	0.799
Median	0.0099	95% KM (Chebyshev) UCL	1.269
SD	1.64	97.5% KM (Chebyshev) UCL	1.628
k star	0.128	99% KM (Chebyshev) UCL	2.334
Theta star	3.372		
Nu star	19.67	**Potential UCLs to Use**	
AppChi2	10.61	**97.5% KM (Chebyshev) UCL**	**1.628**
95% Gamma Approximate UCL (Use when n >= 40)	0.799		
95% Adjusted Gamma UCL (Use when n < 40)	0.808		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Heptachlor

General Statistics

Number of Valid Data	79	Number of Detected Data	38
Number of Distinct Detected Data	37	Number of Non-Detect Data	41
		Percent Non-Detects	51.90%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.0054	Minimum Detected	-5.221
Maximum Detected	210	Maximum Detected	5.347
Mean of Detected	7.944	Mean of Detected	-1.92
SD of Detected	34.45	SD of Detected	2.629
Minimum Non-Detect	0.0005	Minimum Non-Detect	-7.601
Maximum Non-Detect	95	Maximum Non-Detect	4.554

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	78
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	98.73%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.255	Shapiro Wilk Test Statistic	0.899
5% Shapiro Wilk Critical Value	0.938	5% Shapiro Wilk Critical Value	0.938
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.509	Mean	-3.267
SD	24.54	SD	3.144
95% DL/2 (t) UCL	9.105	95% H-Stat (DL/2) UCL	31.63
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.573
		SD in Log Scale	3.383
		Mean in Original Scale	3.823
		SD in Original Scale	24.06
		95% t UCL	8.329
		95% Percentile Bootstrap UCL	8.988
		95% BCA Bootstrap UCL	11.96
		95% H-UCL	24.39
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.189	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	41.99		
nu star	14.38		
A-D Test Statistic	5.202	**Nonparametric Statistics**	
5% A-D Critical Value	0.909	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.909	Mean	3.848
5% K-S Critical Value	0.159	SD	23.91
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.727
		95% KM (t) UCL	8.387
Assuming Gamma Distribution		95% KM (z) UCL	8.333
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.355
Minimum	0.000001	95% KM (bootstrap t) UCL	32.04
Maximum	210	95% KM (BCA) UCL	9.595
Mean	3.821	95% KM (Percentile Bootstrap) UCL	8.941
Median	0.000001	95% KM (Chebyshev) UCL	15.73
SD	24.06	97.5% KM (Chebyshev) UCL	20.88
k star	0.0926	99% KM (Chebyshev) UCL	30.98
Theta star	41.25		
Nu star	14.63	**Potential UCLs to Use**	
AppChi2	7.007	**97.5% KM (Chebyshev) UCL**	**20.88**
95% Gamma Approximate UCL (Use when n >= 40)	7.979		
95% Adjusted Gamma UCL (Use when n < 40)	8.093		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Heptachlor epoxide

General Statistics

Number of Valid Data	20	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	17
		Percent Non-Detects	85.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.008	Minimum Detected	-4.828
Maximum Detected	0.96	Maximum Detected	-0.0408
Mean of Detected	0.328	Mean of Detected	-3.001
SD of Detected	0.547	SD of Detected	2.587
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	95	Maximum Non-Detect	4.554

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.756	Shapiro Wilk Test Statistic	0.856
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.812	Mean	-1.245
SD	10.52	SD	2.056
95% DL/2 (t) UCL	6.881	95% H-Stat (DL/2) UCL	19.03
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.078
		SD in Log Scale	1.383
		Mean in Original Scale	0.0705
		SD in Original Scale	0.212
		95% t UCL	0.152
		95% Percentile Bootstrap UCL	0.163
		95% BCA Bootstrap UCL	0.21
		95% H-UCL	0.123

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data appear Lognormal at 5% Significance Level**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.146
5% K-S Critical Value	N/A	SD	0.332
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.154
		95% KM (t) UCL	0.412
Assuming Gamma Distribution		95% KM (z) UCL	0.399
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.391
Minimum	N/A	95% KM (bootstrap t) UCL	12.87
Maximum	N/A	95% KM (BCA) UCL	0.96
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.817
SD	N/A	97.5% KM (Chebyshev) UCL	1.107
k star	N/A	99% KM (Chebyshev) UCL	1.677
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	**99% KM (Chebyshev) UCL**	**1.677**
95% Gamma Approximate UCL (Use when n >= 40)	N/A		
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Warning: Recommended UCL exceeds the maximum observation

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Methoxychlor

General Statistics

Number of Valid Data	70	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	68
		Percent Non-Detects	97.14%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.031	Minimum Detected	-3.474
Maximum Detected	0.067	Maximum Detected	-2.703
Mean of Detected	0.049	Mean of Detected	-3.088
SD of Detected	0.0255	SD of Detected	0.545
Minimum Non-Detect	0.0021	Minimum Non-Detect	-6.166
Maximum Non-Detect	950	Maximum Non-Detect	6.856

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	70
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.699	Mean	-2.286
SD	57.74	SD	3.072
95% DL/2 (t) UCL	21.21	95% H-Stat (DL/2) UCL	44.43
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/A

Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	N/A	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	**Nonparametric Statistics**	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0325
5% K-S Critical Value	N/A	SD	0.00719
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00208
		95% KM (t) UCL	0.036
Assuming Gamma Distribution		95% KM (z) UCL	0.0359
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0553
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.067
Median	N/A	95% KM (Chebyshev) UCL	0.0416
SD	N/A	97.5% KM (Chebyshev) UCL	0.0455
k star	N/A	99% KM (Chebyshev) UCL	0.0532
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	**95% KM (t) UCL**	**0.036**
95% Gamma Approximate UCL (Use when n >= 40)	N/A	95% KM (% Bootstrap) UCL	0.067
95% Adjusted Gamma UCL (Use when n < 40)	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

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Toxaphene

General Statistics

Number of Valid Data	80	Number of Detected Data	32
Number of Distinct Detected Data	32	Number of Non-Detect Data	48
		Percent Non-Detects	60.00%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.251	Log Statistics Not Avaliable	
Maximum Detected	1633		
Mean of Detected	94.91		
Mean of Detected	94.91		
Mean of Detected	94.91		
Maximum Non-Detect	1900		
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	80
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**
Shapiro Wilk Test Statistic	0.349	Not Available
5% Shapiro Wilk Critical Value	0.93	
Data not Normal at 5% Significance Level		

Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	N/A
Mean	55.48		
SD	216.2		
95% DL/2 (t) UCL	95.71		
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	N/A

Gamma Distribution Test with Detected Values Only	**Data Distribution Test with Detected Values Only**
Gamma Statistics Not Available	Data appear Lognormal at 5% Significance Level

Potential UCLs to Use		**Nonparametric Statistics**	
97.5% KM (Chebyshev) UCL	**175.4**	Kaplan-Meier (KM) Method	
		Mean	39.25
		SD	190.6
		SE of Mean	21.81
		95% KM (t) UCL	75.55
		95% KM (z) UCL	75.12
		95% KM (jackknife) UCL	75.14
		95% KM (bootstrap t) UCL	167.2
		95% KM (BCA) UCL	84.57
		95% KM (Percentile Bootstrap) UCL	78.58
		95% KM (Chebyshev) UCL	134.3
		97.5% KM (Chebyshev) UCL	175.4
		99% KM (Chebyshev) UCL	256.2

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

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ProUCL Output for BFEL Surface Soils - VOCs and SVOCs

Acenaphthene

General Statistics

Number of Valid Data	20	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	18
		Percent Non-Detects	90.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.41	Minimum Detected	-0.892
Maximum Detected	0.75	Maximum Detected	-0.288
Mean of Detected	0.58	Mean of Detected	-0.59
SD of Detected	0.24	SD of Detected	0.427
Minimum Non-Detect	0.6	Minimum Non-Detect	-0.511
Maximum Non-Detect	33	Maximum Non-Detect	3.497

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.219	Mean	0.374
SD	6.714	SD	1.727
95% DL/2 (t) UCL	7.815	95% H-Stat (DL/2) UCL	29.29

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)
Theta Star	N/A	
nu star	N/A	
A-D Test Statistic	N/A	Nonparametric Statistics
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method
K-S Test Statistic	N/A	Mean 0.448
5% K-S Critical Value	N/A	SD 0.107
Data not Gamma Distributed at 5% Significance Level		SE of Mean 0.0504
		95% KM (t) UCL 0.535
Assuming Gamma Distribution		95% KM (z) UCL 0.531
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL 0.667
Minimum	N/A	95% KM (bootstrap t) UCL N/A
Maximum	N/A	95% KM (BCA) UCL 0.75
Mean	N/A	95% KM (Percentile Bootstrap) UCL 0.75
Median	N/A	95% KM (Chebyshev) UCL 0.667
SD	N/A	97.5% KM (Chebyshev) UCL 0.762
k star	N/A	99% KM (Chebyshev) UCL 0.949
Theta star	N/A	
Nu star	N/A	**Potential UCLs to Use**
AppChi2	N/A	**95% KM (t) UCL 0.535**
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL 0.75
95% Adjusted Gamma UCL	N/A	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Anthracene

General Statistics			
Number of Valid Data	20	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	13
		Percent Non-Detects	65.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.064	Minimum Detected	-2.749
Maximum Detected	6.9	Maximum Detected	1.932
Mean of Detected	1.508	Mean of Detected	-0.744
SD of Detected	2.474	SD of Detected	1.711
Minimum Non-Detect	0.6	Minimum Non-Detect	-0.511
Maximum Non-Detect	33	Maximum Non-Detect	3.497

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.663	Shapiro Wilk Test Statistic	0.951
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.915	Mean	0.195
SD	6.434	SD	1.915
95% DL/2 (t) UCL	7.403	95% H-Stat (DL/2) UCL	47.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.322
		SD in Log Scale	1.072
		Mean in Original Scale	0.658
		SD in Original Scale	1.531
		95% t UCL	1.25
		95% Percentile Bootstrap UCL	1.288
		95% BCA Bootstrap UCL	1.688
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.405	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.72		
nu star	5.676		
A-D Test Statistic	0.377	Nonparametric Statistics	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	0.852
5% K-S Critical Value	0.326	SD	1.75
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.507
		95% KM (t) UCL	1.729
Assuming Gamma Distribution		95% KM (z) UCL	1.686
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.707
Minimum	0.064	95% KM (bootstrap t) UCL	4.837
Maximum	6.9	95% KM (BCA) UCL	1.909
Mean	1.477	95% KM (Percentile Bootstrap) UCL	1.784
Median	1.357	95% KM (Chebyshev) UCL	3.063
SD	1.393	97.5% KM (Chebyshev) UCL	4.019
k star	1.202	99% KM (Chebyshev) UCL	5.898
Theta star	1.229		
Nu star	48.07	**Potential UCLs to Use**	
AppChi2	33.16	**95% KM (t) UCL**	**1.729**
95% Gamma Approximate UCL	2.141		
95% Adjusted Gamma UCL	2.206		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(a)anthracene

General Statistics			
Number of Valid Data	33	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	13
		Percent Non-Detects	39.39%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.025	Minimum Detected	-3.689
Maximum Detected	32	Maximum Detected	3.466
Mean of Detected	3.497	Mean of Detected	-0.393
SD of Detected	7.683	SD of Detected	1.848
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	33	Maximum Non-Detect	3.497
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.505	Shapiro Wilk Test Statistic	0.964
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.3	Mean	-0.441
SD	7.359	SD	2.386
95% DL/2 (t) UCL	6.47	95% H-Stat (DL/2) UCL	72.49
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.11
		SD in Log Scale	1.884
		Mean in Original Scale	2.194
		SD in Original Scale	6.143
		95% t UCL	4.006
		95% Percentile Bootstrap UCL	4.103
		95% BCA Bootstrap UCL	5.074
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.373	Data appear Lognormal at 5% Significance Level	
Theta Star	9.363		
nu star	14.94		
A-D Test Statistic	1.313	Nonparametric Statistics	
5% A-D Critical Value	0.824	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.824	Mean	2.409
5% K-S Critical Value	0.208	SD	6.204
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.147
		95% KM (t) UCL	4.352
Assuming Gamma Distribution		95% KM (z) UCL	4.296
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.329
Minimum	0.025	95% KM (bootstrap t) UCL	9.055
Maximum	32	95% KM (BCA) UCL	4.608
Mean	3.459	95% KM (Percentile Bootstrap) UCL	4.384
Median	3.054	95% KM (Chebyshev) UCL	7.41
SD	5.922	97.5% KM (Chebyshev) UCL	9.574
k star	0.581	99% KM (Chebyshev) UCL	13.83
Theta star	5.956		
Nu star	38.33	**Potential UCLs to Use**	
AppChi2	25.16	**99% KM (Chebyshev) UCL**	**13.83**
95% Gamma Approximate UCL	5.272		
95% Adjusted Gamma UCL	5.39		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(a)pyrene

General Statistics			
Number of Valid Data	33	Number of Detected Data	20
Number of Distinct Detected Data	18	Number of Non-Detect Data	13
		Percent Non-Detects	39.39%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0052	Minimum Detected	-5.259
Maximum Detected	14	Maximum Detected	2.639
Mean of Detected	1.676	Mean of Detected	-0.856
SD of Detected	3.195	SD of Detected	1.891
Minimum Non-Detect	0.0023	Minimum Non-Detect	-6.075
Maximum Non-Detect	33	Maximum Non-Detect	3.497

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.547	Shapiro Wilk Test Statistic	0.971
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.207	Mean	-0.689
SD	5.268	SD	2.489
95% DL/2 (t) UCL	4.76	95% H-Stat (DL/2) UCL	84.98
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.444
		SD in Log Scale	1.827
		Mean in Original Scale	1.076
		SD in Original Scale	2.576
		95% t UCL	1.835
		95% Percentile Bootstrap UCL	1.922
		95% BCA Bootstrap UCL	2.4
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.431	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	3.889		
nu star	17.23		
A-D Test Statistic	0.669	Nonparametric Statistics	
5% A-D Critical Value	0.809	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.809	Mean	1.247
5% K-S Critical Value	0.206	SD	2.722
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.528
		95% KM (t) UCL	2.142
Assuming Gamma Distribution		95% KM (z) UCL	2.116
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.136
Minimum	0.0052	95% KM (bootstrap t) UCL	3.596
Maximum	14	95% KM (BCA) UCL	2.259
Mean	1.672	95% KM (Percentile Bootstrap) UCL	2.215
Median	1.619	95% KM (Chebyshev) UCL	3.551
SD	2.463	97.5% KM (Chebyshev) UCL	4.547
k star	0.677	99% KM (Chebyshev) UCL	6.505
Theta star	2.469		
Nu star	44.68	**Potential UCLs to Use**	
AppChi2	30.35	**95% KM (BCA) UCL**	**2.259**
95% Gamma Approximate UCL	2.461		
95% Adjusted Gamma UCL	2.511		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(b)fluoranthene

General Statistics			
Number of Valid Data	13	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	6
		Percent Non-Detects	46.15%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0052	Minimum Detected	-5.259
Maximum Detected	2.9	Maximum Detected	1.065
Mean of Detected	0.627	Mean of Detected	-1.745
SD of Detected	1.022	SD of Detected	2.097
Minimum Non-Detect	0.0057	Minimum Non-Detect	-5.167
Maximum Non-Detect	2.2	Maximum Non-Detect	0.788

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	1
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	92.31%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.637	Shapiro Wilk Test Statistic	0.942
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.499	Mean	-2.087
SD	0.781	SD	2.292
95% DL/2 (t) UCL	0.885	95% H-Stat (DL/2) UCL	62.76
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.579
		SD in Log Scale	1.965
		Mean in Original Scale	0.366
		SD in Original Scale	0.782
		95% t UCL	0.753
		95% Percentile Bootstrap UCL	0.764
		95% BCA Bootstrap UCL	1.018
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.379	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.653		
nu star	5.312		
A-D Test Statistic	0.277	Nonparametric Statistics	
5% A-D Critical Value	0.752	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.752	Mean	0.396
5% K-S Critical Value	0.327	SD	0.749
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.228
		95% KM (t) UCL	0.803
Assuming Gamma Distribution		95% KM (z) UCL	0.771
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.787
Minimum	1.00E-12	95% KM (bootstrap t) UCL	1.635
Maximum	2.9	95% KM (BCA) UCL	0.873
Mean	0.554	95% KM (Percentile Bootstrap) UCL	0.823
Median	0.27	95% KM (Chebyshev) UCL	1.391
SD	0.856	97.5% KM (Chebyshev) UCL	1.821
k star	0.141	99% KM (Chebyshev) UCL	2.666
Theta star	3.914		
Nu star	3.678	**Potential UCLs to Use**	
AppChi2	0.599	**95% KM (BCA) UCL**	**0.873**
95% Gamma Approximate UCL	3.401		
95% Adjusted Gamma UCL	4.513		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(b,k)fluoranthene

General Statistics			
Number of Valid Data	20	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	7
		Percent Non-Detects	35.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.096	Minimum Detected	-2.343
Maximum Detected	22	Maximum Detected	3.091
Mean of Detected	3.998	Mean of Detected	-0.0776
SD of Detected	6.508	SD of Detected	1.936
Minimum Non-Detect	0.7	Minimum Non-Detect	-0.357
Maximum Non-Detect	33	Maximum Non-Detect	3.497
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.678	Shapiro Wilk Test Statistic	0.908
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.11	Mean	0.505
SD	7.054	SD	2.008
95% DL/2 (t) UCL	8.837	95% H-Stat (DL/2) UCL	90.92
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.26
		SD in Log Scale	1.588
		Mean in Original Scale	2.812
		SD in Original Scale	5.433
		95% t UCL	4.912
		95% Percentile Bootstrap UCL	5.035
		95% BCA Bootstrap UCL	5.614
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.392	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.21		
nu star	10.18		
A-D Test Statistic	0.64	Nonparametric Statistics	
5% A-D Critical Value	0.801	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.801	Mean	3.497
5% K-S Critical Value	0.252	SD	5.96
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.602
		95% KM (t) UCL	6.267
Assuming Gamma Distribution		95% KM (z) UCL	6.132
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.276
Minimum	1.00E-12	95% KM (bootstrap t) UCL	9.607
Maximum	22	95% KM (BCA) UCL	6.237
Mean	3.459	95% KM (Percentile Bootstrap) UCL	6.453
Median	2	95% KM (Chebyshev) UCL	10.48
SD	5.311	97.5% KM (Chebyshev) UCL	13.5
k star	0.201	99% KM (Chebyshev) UCL	19.43
Theta star	17.23		
Nu star	8.03	**Potential UCLs to Use**	
AppChi2	2.752	**95% KM (BCA) UCL**	**6.237**
95% Gamma Approximate UCL	10.09		
95% Adjusted Gamma UCL	11.05		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(g,h,i)perylene

General Statistics			
Number of Valid Data	33	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	21
		Percent Non-Detects	63.64%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.025	Minimum Detected	-3.689
Maximum Detected	21	Maximum Detected	3.045
Mean of Detected	2.429	Mean of Detected	-0.856
SD of Detected	5.952	SD of Detected	1.873
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	33	Maximum Non-Detect	3.497
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.45	Shapiro Wilk Test Statistic	0.975
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.54	Mean	-0.683
SD	6.142	SD	2.298
95% DL/2 (t) UCL	5.351	95% H-Stat (DL/2) UCL	40.91
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.122
		SD in Log Scale	1.704
		Mean in Original Scale	0.94
		SD in Original Scale	3.672
		95% t UCL	2.023
		95% Percentile Bootstrap UCL	2.158
		95% BCA Bootstrap UCL	2.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.341	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	7.124		
nu star	8.181		
A-D Test Statistic	0.948	Nonparametric Statistics	
5% A-D Critical Value	0.808	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.808	Mean	1.161
5% K-S Critical Value	0.263	SD	3.967
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.798
		95% KM (t) UCL	2.513
Assuming Gamma Distribution		95% KM (z) UCL	2.474
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.48
Minimum	1.00E-12	95% KM (bootstrap t) UCL	11.44
Maximum	21	95% KM (BCA) UCL	2.757
Mean	1.844	95% KM (Percentile Bootstrap) UCL	2.595
Median	0.717	95% KM (Chebyshev) UCL	4.64
SD	3.821	97.5% KM (Chebyshev) UCL	6.145
k star	0.13	99% KM (Chebyshev) UCL	9.102
Theta star	14.23		
Nu star	8.553	**Potential UCLs to Use**	
AppChi2	3.059	**95% KM (t) UCL**	**2.513**
95% Gamma Approximate UCL	5.156		
95% Adjusted Gamma UCL	5.454		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(k)fluoranthene

General Statistics			
Number of Valid Data	13	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	6
		Percent Non-Detects	46.15%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	0.99	Maximum Detected	-0.0101
Mean of Detected	0.33	Mean of Detected	-2.311
SD of Detected	0.364	SD of Detected	2.276
Minimum Non-Detect	0.0023	Minimum Non-Detect	-6.075
Maximum Non-Detect	2.2	Maximum Non-Detect	0.788

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk Test Statistic	0.897
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.339	Mean	-2.531
SD	0.365	SD	2.581
95% DL/2 (t) UCL	0.519	95% H-Stat (DL/2) UCL	200.4
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.165
		SD in Log Scale	2.102
		Mean in Original Scale	0.195
		SD in Original Scale	0.301
		95% t UCL	0.343
		95% Percentile Bootstrap UCL	0.335
		95% BCA Bootstrap UCL	0.372
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.395	Data appear Normal at 5% Significance Level	
Theta Star	0.837		
nu star	5.526		
A-D Test Statistic	0.257	Nonparametric Statistics	
5% A-D Critical Value	0.75	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.75	Mean	0.234
5% K-S Critical Value	0.327	SD	0.305
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.103
		95% KM (t) UCL	0.417
Assuming Gamma Distribution		95% KM (z) UCL	0.403
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.415
Minimum	0.0021	95% KM (bootstrap t) UCL	0.518
Maximum	0.99	95% KM (BCA) UCL	0.428
Mean	0.295	95% KM (Percentile Bootstrap) UCL	0.422
Median	0.28	95% KM (Chebyshev) UCL	0.682
SD	0.329	97.5% KM (Chebyshev) UCL	0.875
k star	0.486	99% KM (Chebyshev) UCL	1.255
Theta star	0.608		
Nu star	12.63	**Potential UCLs to Use**	
AppChi2	5.642	**95% KM (t) UCL**	**0.417**
95% Gamma Approximate UCL	0.661	95% KM (Percentile Bootstrap) UCL	0.422
95% Adjusted Gamma UCL	0.747		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Chrysene

General Statistics			
Number of Valid Data	33	Number of Detected Data	19
Number of Distinct Detected Data	19	Number of Non-Detect Data	14
		Percent Non-Detects	42.42%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.13	Minimum Detected	-2.04
Maximum Detected	32	Maximum Detected	3.466
Mean of Detected	3.836	Mean of Detected	-0.00469
SD of Detected	7.749	SD of Detected	1.63
Minimum Non-Detect	0.031	Minimum Non-Detect	-3.474
Maximum Non-Detect	33	Maximum Non-Detect	3.497
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.535	Shapiro Wilk Test Statistic	0.93
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.391	Mean	-0.226
SD	7.292	SD	2.177
95% DL/2 (t) UCL	6.541	95% H-Stat (DL/2) UCL	41.7
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.854
		SD in Log Scale	1.75
		Mean in Original Scale	2.3
		SD in Original Scale	6.09
		95% t UCL	4.096
		95% Percentile Bootstrap UCL	4.072
		95% BCA Bootstrap UCL	5.231
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.435	Data appear Lognormal at 5% Significance Level	
Theta Star	8.822		
nu star	16.52		
A-D Test Statistic	1.214	Nonparametric Statistics	
5% A-D Critical Value	0.808	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.808	Mean	2.536
5% K-S Critical Value	0.211	SD	6.137
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.136
		95% KM (t) UCL	4.459
Assuming Gamma Distribution		95% KM (z) UCL	4.404
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.437
Minimum	1.00E-12	95% KM (bootstrap t) UCL	7.934
Maximum	32	95% KM (BCA) UCL	4.484
Mean	3.505	95% KM (Percentile Bootstrap) UCL	4.573
Median	1	95% KM (Chebyshev) UCL	7.486
SD	6.083	97.5% KM (Chebyshev) UCL	9.628
k star	0.159	99% KM (Chebyshev) UCL	13.84
Theta star	22.11		
Nu star	10.46	**Potential UCLs to Use**	
AppChi2	4.233	**99% KM (Chebyshev) UCL**	**13.84**
95% Gamma Approximate UCL	8.664		
95% Adjusted Gamma UCL	9.1		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Fluoranthene

General Statistics			
Number of Valid Data	33	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	15
		Percent Non-Detects	45.45%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.18	Minimum Detected	-1.715
Maximum Detected	34	Maximum Detected	3.526
Mean of Detected	5.171	Mean of Detected	0.404
SD of Detected	9.72	SD of Detected	1.558
Minimum Non-Detect	0.31	Minimum Non-Detect	-1.171
Maximum Non-Detect	33	Maximum Non-Detect	3.497
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	32
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	96.97%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.554	Shapiro Wilk Test Statistic	0.942
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.028	Mean	0.225
SD	8.349	SD	1.743
95% DL/2 (t) UCL	7.49	95% H-Stat (DL/2) UCL	16.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.351
		SD in Log Scale	1.477
		Mean in Original Scale	2.976
		SD in Original Scale	7.495
		95% t UCL	5.186
		95% Percentile Bootstrap UCL	5.184
		95% BCA Bootstrap UCL	6.114
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.463	Data appear Lognormal at 5% Significance Level	
Theta Star	11.17		
nu star	16.66		
A-D Test Statistic	1.2	Nonparametric Statistics	
5% A-D Critical Value	0.799	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.799	Mean	3.129
5% K-S Critical Value	0.215	SD	7.425
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.347
		95% KM (t) UCL	5.411
Assuming Gamma Distribution		95% KM (z) UCL	5.344
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.383
Minimum	1.00E-12	95% KM (bootstrap t) UCL	10.64
Maximum	34	95% KM (BCA) UCL	5.538
Mean	4.653	95% KM (Percentile Bootstrap) UCL	5.586
Median	1.397	95% KM (Chebyshev) UCL	9
SD	7.636	97.5% KM (Chebyshev) UCL	11.54
k star	0.141	99% KM (Chebyshev) UCL	16.53
Theta star	32.97		
Nu star	9.315	**Potential UCLs to Use**	
AppChi2	3.519	**99% KM (Chebyshev) UCL**	**16.53**
95% Gamma Approximate UCL	12.32		
95% Adjusted Gamma UCL	12.99		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Fluorene

General Statistics			
Number of Valid Data	20	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	18
		Percent Non-Detects	90.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.41	Minimum Detected	-0.892
Maximum Detected	0.57	Maximum Detected	-0.562
Mean of Detected	0.49	Mean of Detected	-0.727
SD of Detected	0.113	SD of Detected	0.233
Minimum Non-Detect	0.6	Minimum Non-Detect	-0.511
Maximum Non-Detect	33	Maximum Non-Detect	3.497

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.21	Mean	0.36
SD	6.721	SD	1.733
95% DL/2 (t) UCL	7.808	95% H-Stat (DL/2) UCL	29.52
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.49
5% K-S Critical Value	N/A	SD	0.08
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.08
		95% KM (t) UCL	0.628
Assuming Gamma Distribution		95% KM (z) UCL	0.622
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.681
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	0.57
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.57
Median	N/A	95% KM (Chebyshev) UCL	0.839
SD	N/A	97.5% KM (Chebyshev) UCL	0.99
k star	N/A	99% KM (Chebyshev) UCL	1.286
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	**95% KM (t) UCL**	**0.628**
95% Gamma Approximate UCL	N/A	**95% KM (% Bootstrap) UCL**	**0.57**
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Indeno(1,2,3-cd)pyrene

General Statistics			
Number of Valid Data	20	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	14
		Percent Non-Detects	70.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.31	Minimum Detected	-1.171
Maximum Detected	3.4	Maximum Detected	1.224
Mean of Detected	1.343	Mean of Detected	-0.0326
SD of Detected	1.178	SD of Detected	0.899
Minimum Non-Detect	0.6	Minimum Non-Detect	-0.511
Maximum Non-Detect	36	Maximum Non-Detect	3.584

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.869	Shapiro Wilk Test Statistic	0.973
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.779	Mean	0.378
SD	6.375	SD	1.647
95% DL/2 (t) UCL	7.243	95% H-Stat (DL/2) UCL	22.76
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.549
		SD in Log Scale	0.628
		Mean in Original Scale	0.741
		SD in Original Scale	0.737
		95% t UCL	1.026
		95% Percentile Bootstrap UCL	1.039
		95% BCA Bootstrap UCL	1.156
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.947	Data appear Normal at 5% Significance Level	
Theta Star	1.418		
nu star	11.37		
A-D Test Statistic	0.244	Nonparametric Statistics	
5% A-D Critical Value	0.707	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.707	Mean	0.827
5% K-S Critical Value	0.337	SD	0.841
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.251
		95% KM (t) UCL	1.261
Assuming Gamma Distribution		95% KM (z) UCL	1.24
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.259
Minimum	0.31	95% KM (bootstrap t) UCL	1.653
Maximum	3.4	95% KM (BCA) UCL	1.482
Mean	1.471	95% KM (Percentile Bootstrap) UCL	1.364
Median	1.432	95% KM (Chebyshev) UCL	1.922
SD	0.797	97.5% KM (Chebyshev) UCL	2.397
k star	2.709	99% KM (Chebyshev) UCL	3.328
Theta star	0.543		
Nu star	108.4	**Potential UCLs to Use**	
AppChi2	85.33	**95% KM (t) UCL**	**1.261**
95% Gamma Approximate UCL	1.868	**95% KM (Percentile Bootstrap) UCL**	**1.364**
95% Adjusted Gamma UCL	1.904		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Naphthalene

General Statistics			
Number of Valid Data	20	Number of Detected Data	4
Number of Distinct Detected Data	3	Number of Non-Detect Data	16
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.071	Minimum Detected	-2.645
Maximum Detected	0.25	Maximum Detected	-1.386
Mean of Detected	0.175	Mean of Detected	-1.864
SD of Detected	0.0896	SD of Detected	0.605
Minimum Non-Detect	0.6	Minimum Non-Detect	-0.511
Maximum Non-Detect	33	Maximum Non-Detect	3.497

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.85	Shapiro Wilk Test Statistic	0.866
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.148	Mean	0.139
SD	6.767	SD	1.942
95% DL/2 (t) UCL	7.764	95% H-Stat (DL/2) UCL	49.25
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.864
		SD in Log Scale	0.308
		Mean in Original Scale	0.162
		SD in Original Scale	0.0475
		95% t UCL	0.18
		95% Percentile Bootstrap UCL	0.18
		95% BCA Bootstrap UCL	0.179
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.223	Data appear Normal at 5% Significance Level	
Theta Star	0.143		
nu star	9.787		
A-D Test Statistic	0.434	Nonparametric Statistics	
5% A-D Critical Value	0.659	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.659	Mean	0.175
5% K-S Critical Value	0.396	SD	0.0776
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0448
		95% KM (t) UCL	0.253
Assuming Gamma Distribution		95% KM (z) UCL	0.249
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.262
Minimum	0.071	95% KM (bootstrap t) UCL	0.261
Maximum	0.25	95% KM (BCA) UCL	0.25
Mean	0.177	95% KM (Percentile Bootstrap) UCL	0.25
Median	0.178	95% KM (Chebyshev) UCL	0.371
SD	0.047	97.5% KM (Chebyshev) UCL	0.455
k star	10.9	99% KM (Chebyshev) UCL	0.621
Theta star	0.0162		
Nu star	435.9	**Potential UCLs to Use**	
AppChi2	388.5	**95% KM (t) UCL**	**0.253**
95% Gamma Approximate UCL	0.198	**95% KM (Percentile Bootstrap) UCL**	**0.25**
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Phenanthrene

General Statistics			
Number of Valid Data	12	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	9
		Percent Non-Detects	75.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.55	Minimum Detected	-0.598
Maximum Detected	0.9	Maximum Detected	-0.105
Mean of Detected	0.72	Mean of Detected	-0.349
SD of Detected	0.175	SD of Detected	0.246
Minimum Non-Detect	0.21	Minimum Non-Detect	-1.561
Maximum Non-Detect	2.2	Maximum Non-Detect	0.788

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.998	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.403	Mean	-1.251
SD	0.34	SD	0.878
95% DL/2 (t) UCL	0.579	95% H-Stat (DL/2) UCL	0.859
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.957
		SD in Log Scale	0.417
		Mean in Original Scale	0.419
		SD in Original Scale	0.204
		95% t UCL	0.525
		95% Percentile Bootstrap UCL	0.511
		95% BCA Bootstrap UCL	0.544
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.596
5% K-S Critical Value	N/A	SD	0.106
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0393
		95% KM (t) UCL	0.667
Assuming Gamma Distribution		95% KM (z) UCL	0.661
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.706
Minimum	N/A	95% KM (bootstrap t) UCL	0.664
Maximum	N/A	95% KM (BCA) UCL	0.9
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.9
Median	N/A	95% KM (Chebyshev) UCL	0.768
SD	N/A	97.5% KM (Chebyshev) UCL	0.842
k star	N/A	99% KM (Chebyshev) UCL	0.987
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	**95% KM (t) UCL**	**0.667**
95% Gamma Approximate UCL	N/A	**95% KM (Percentile Bootstrap) UCL**	**0.9**
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Pyrene

General Statistics			
Number of Valid Data	33	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	13
		Percent Non-Detects	39.39%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.087	Minimum Detected	-2.442
Maximum Detected	32	Maximum Detected	3.466
Mean of Detected	4.928	Mean of Detected	0.253
SD of Detected	8.999	SD of Detected	1.686
Minimum Non-Detect	0.073	Minimum Non-Detect	-2.617
Maximum Non-Detect	33	Maximum Non-Detect	3.497
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	33
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.583	Shapiro Wilk Test Statistic	0.956
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.171	Mean	0.129
SD	8.138	SD	1.981
95% DL/2 (t) UCL	7.571	95% H-Stat (DL/2) UCL	30.86
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.533
		SD in Log Scale	1.789
		Mean in Original Scale	3.097
		SD in Original Scale	7.309
		95% t UCL	5.252
		95% Percentile Bootstrap UCL	5.364
		95% BCA Bootstrap UCL	6.101
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.439	Data appear Lognormal at 5% Significance Level	
Theta Star	11.24		
nu star	17.55		
A-D Test Statistic	1.109	Nonparametric Statistics	
5% A-D Critical Value	0.807	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.807	Mean	3.358
5% K-S Critical Value	0.206	SD	7.353
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.356
		95% KM (t) UCL	5.654
Assuming Gamma Distribution		95% KM (z) UCL	5.588
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.622
Minimum	1.00E-12	95% KM (bootstrap t) UCL	8.538
Maximum	32	95% KM (BCA) UCL	5.644
Mean	4.171	95% KM (Percentile Bootstrap) UCL	5.793
Median	1.2	95% KM (Chebyshev) UCL	9.268
SD	7.244	97.5% KM (Chebyshev) UCL	11.83
k star	0.177	99% KM (Chebyshev) UCL	16.85
Theta star	23.61		
Nu star	11.66	**Potential UCLs to Use**	
AppChi2	5.005	**99% KM (Chebyshev) UCL**	**16.85**
95% Gamma Approximate UCL	9.719		
95% Adjusted Gamma UCL	10.17		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

ProUCL Output for BFEL Subsurface Soils - Metals

Arsenic

General Statistics

Number of Valid Data	191	Number of Detected Data	154
Number of Distinct Detected Data	122	Number of Non-Detect Data	37
		Percent Non-Detects	19.37%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.68	Minimum Detected	-0.386
Maximum Detected	3300	Maximum Detected	8.102
Mean of Detected	126.6	Mean of Detected	3.406
SD of Detected	323.9	SD of Detected	1.688
Minimum Non-Detect	0.54	Minimum Non-Detect	-0.616
Maximum Non-Detect	13	Maximum Non-Detect	2.565

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	94
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	97
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	49.21%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.349	Lilliefors Test Statistic	0.115
5% Lilliefors Critical Value	0.0714	5% Lilliefors Critical Value	0.0714
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	102.6	Mean	2.866
SD	294.7	SD	1.906
95% DL/2 (t) UCL	137.8	95% H-Stat (DL/2) UCL	165.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.783
		SD in Log Scale	2.027
		Mean in Original Scale	102.5
		SD in Original Scale	294.8
		95% t UCL	137.7
		95% Percentile Bootstrap UCL	140.7
		95% BCA Bootstrap UCL	157.1
		95% H-UCL	203.3
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.445	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	284.3		
nu star	137.2		
A-D Test Statistic	7.215	**Nonparametric Statistics**	
5% A-D Critical Value	0.832	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.832	Mean	102.5
5% K-S Critical Value	0.0804	SD	294
Data not Gamma Distributed at 5% Significance Level		SE of Mean	21.34
		95% KM (t) UCL	137.8
Assuming Gamma Distribution		95% KM (z) UCL	137.6
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	137.8
Minimum	0.000001	95% KM (bootstrap t) UCL	165.6
Maximum	3300	95% KM (BCA) UCL	145.9
Mean	102.1	95% KM (Percentile Bootstrap) UCL	139.9
Median	13	95% KM (Chebyshev) UCL	195.5
SD	294.9	97.5% KM (Chebyshev) UCL	235.8
k star	0.167	99% KM (Chebyshev) UCL	314.9
Theta star	611.2		
Nu star	63.81	**Potential UCLs to Use**	
AppChi2	46.43	**97.5% KM (Chebyshev) UCL**	**235.8**
95% Gamma Approximate UCL (Use when n >= 40)	140.3		
95% Adjusted Gamma UCL (Use when n < 40)	140.7		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Copper

General Statistics

Number of Valid Data	65	Number of Detected Data	55
Number of Distinct Detected Data	55	Number of Non-Detect Data	10
		Percent Non-Detects	15.38%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.552	Minimum Detected	-0.594
Maximum Detected	522.3	Maximum Detected	6.258
Mean of Detected	136.9	Mean of Detected	4.337
SD of Detected	135.2	SD of Detected	1.307
Minimum Non-Detect	2.6	Minimum Non-Detect	0.956
Maximum Non-Detect	50	Maximum Non-Detect	3.912

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	38
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	41.54%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.187	Lilliefors Test Statistic	0.0899
5% Lilliefors Critical Value	0.119	5% Lilliefors Critical Value	0.119
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	119.3	Mean	4.12
SD	131	SD	1.352
95% DL/2 (t) UCL	146.5	95% H-Stat (DL/2) UCL	224.5
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	72.41	Mean in Log Scale	4.088
SD	183.1	SD in Log Scale	1.364
95% MLE (t) UCL	110.3	Mean in Original Scale	118.7
95% MLE (Tiku) UCL	115.5	SD in Original Scale	131.5
		95% t UCL	146
		95% Percentile Bootstrap UCL	145.9
		95% BCA Bootstrap UCL	149.3
		95% H UCL	222.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.95	**Data appear Gamma Distributed at 5% Significance Level**	
Theta Star	144.1		
nu star	104.5		
A-D Test Statistic	0.476	**Nonparametric Statistics**	
5% A-D Critical Value	0.78	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.78	Mean	119.3
5% K-S Critical Value	0.124	SD	130.1
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	16.31
		95% KM (t) UCL	146.5
Assuming Gamma Distribution		95% KM (z) UCL	146.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	146.5
Minimum	0.000001	95% KM (bootstrap t) UCL	150.7
Maximum	522.3	95% KM (BCA) UCL	144.9
Mean	117.7	95% KM (Percentile Bootstrap) UCL	147
Median	61.45	95% KM (Chebyshev) UCL	190.4
SD	132.5	97.5% KM (Chebyshev) UCL	221.1
k star	0.309	99% KM (Chebyshev) UCL	281.6
Theta star	380.9		
Nu star	40.18	**Potential UCLs to Use**	
AppChi2	26.66	**95% KM (Chebyshev) UCL**	**190.4**
95% Gamma Approximate UCL (Use when n >= 40)	177.5		
95% Adjusted Gamma UCL (Use when n < 40)	179.1		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Lead

General Statistics

Number of Valid Data	58	Number of Detected Data	49
Number of Distinct Detected Data	45	Number of Non-Detect Data	9
		Percent Non-Detects	15.52%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.4	Minimum Detected	1.686
Maximum Detected	65300	Maximum Detected	11.09
Mean of Detected	1920	Mean of Detected	4.645
SD of Detected	9317	SD of Detected	2.133
Minimum Non-Detect	38	Minimum Non-Detect	3.638
Maximum Non-Detect	38	Maximum Non-Detect	3.638

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.212	Shapiro Wilk Test Statistic	0.88
5% Shapiro Wilk Critical Value	0.947	5% Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	**1625**	Mean	4.381
SD	8578	SD	2.054
95% DL/2 (t) UCL	3508	95% H-Stat (DL/2) UCL	1901
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	4.386
		SD in Log Scale	2.09
		Mean in Original Scale	1626
		SD in Original Scale	8578
		95% t UCL	3510
		95% Percentile Bootstrap UCL	3849
		95% BCA Bootstrap UCL	5354
		95% H-UCL	2135
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.243	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	7895		
nu star	23.83		
A-D Test Statistic	6.074	**Nonparametric Statistics**	
5% A-D Critical Value	0.887	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.887	Mean	1625
5% K-S Critical Value	0.139	SD	8504
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1128
		95% KM (t) UCL	3511
Assuming Gamma Distribution		95% KM (z) UCL	3481
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3508
Minimum	0.000001	95% KM (bootstrap t) UCL	14391
Maximum	65300	95% KM (BCA) UCL	3977
Mean	1622	95% KM (Percentile Bootstrap) UCL	3843
Median	34.12	95% KM (Chebyshev) UCL	6543
SD	8579	97.5% KM (Chebyshev) UCL	8670
k star	0.143	99% KM (Chebyshev) UCL	12850
Theta star	11351		
Nu star	16.57	**Potential UCLs to Use**	
AppChi2	8.368	99% KM (Chebyshev) UCL	12850
95% Gamma Approximate UCL (Use when n >= 40)	3212		
95% Adjusted Gamma UCL (Use when n < 40)	3270		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Zinc

General Statistics

Number of Valid Data	65	Number of Detected Data	61
Number of Distinct Detected Data	60	Number of Non-Detect Data	4
		Percent Non-Detects	6.15%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	13.84	Minimum Detected	2.628
Maximum Detected	1810	Maximum Detected	7.501
Mean of Detected	212.3	Mean of Detected	4.863
SD of Detected	275.1	SD of Detected	0.977
Minimum Non-Detect	20	Minimum Non-Detect	2.996
Maximum Non-Detect	50	Maximum Non-Detect	3.912

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	54
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	16.92%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.235	Lilliefors Test Statistic	0.103
5% Lilliefors Critical Value	0.113	5% Lilliefors Critical Value	0.113
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	200.6	Mean	4.748
SD	270.4	SD	1.053
95% DL/2 (t) UCL	256.5	95% H-Stat (DL/2) UCL	270.7
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	169.9	Mean in Log Scale	4.756
SD	302.6	SD in Log Scale	1.039
95% MLE (t) UCL	232.5	Mean in Original Scale	200.7
95% MLE (Tiku) UCL	230.6	SD in Original Scale	270.3
		95% t UCL	256.7
		95% Percentile Bootstrap UCL	263.1
		95% BCA Bootstrap UCL	281.2
		95% H UCL	267.5

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	1.103	Data appear Lognormal at 5% Significance Level
Theta Star	192.6	
nu star	134.5	
A-D Test Statistic	1.392	Nonparametric Statistics
5% A-D Critical Value	0.776	Kaplan-Meier (KM) Method
K-S Test Statistic	0.776	Mean 200.9
5% K-S Critical Value	0.117	SD 268.1
Data not Gamma Distributed at 5% Significance Level		SE of Mean 33.53
		95% KM (t) UCL 256.9
Assuming Gamma Distribution		95% KM (z) UCL 256
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL 256.8
Minimum	0.000001	95% KM (bootstrap t) UCL 283.2
Maximum	1810	95% KM (BCA) UCL 264.6
Mean	199.3	95% KM (Percentile Bootstrap) UCL 257
Median	107.9	95% KM (Chebyshev) UCL 347
SD	271.3	97.5% KM (Chebyshev) UCL 410.3
k star	0.405	99% KM (Chebyshev) UCL 534.5
Theta star	491.9	
Nu star	52.66	Potential UCLs to Use
AppChi2	36.99	**95% KM (Chebyshev) UCL 347**
95% Gamma Approximate UCL (Use when n >= 40)	283.7	
95% Adjusted Gamma UCL (Use when n < 40)	286	

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

ProUCL Output for BFEL Subsurface Soils - Pesticides

Alpha, Beta, Delta-BHC

General Statistics

Number of Valid Data	90	Number of Detected Data	49
Number of Distinct Detected Data	45	Number of Non-Detect Data	41
		Percent Non-Detects	45.56%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.005	Minimum Detected	-5.298
Maximum Detected	44	Maximum Detected	3.784
Mean of Detected	1.642	Mean of Detected	-1.99
SD of Detected	6.418	SD of Detected	2.222
Minimum Non-Detect	0.0002	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	48
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	42
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.33%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.273	Shapiro Wilk Test Statistic	0.953
5% Shapiro Wilk Critical Value	0.947	5% Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.895	Mean	-4.347
SD	4.784	SD	3.182
95% DL/2 (t) UCL	1.733	95% H-Stat (DL/2) UCL	10.93
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.609
		SD in Log Scale	3.527
		Mean in Original Scale	0.895
		SD in Original Scale	4.784
		95% t UCL	1.733
		95% Percentile Bootstrap UCL	1.842
		95% BCA Bootstrap UCL	2.442
		95% H-UCL	38.39

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.277	**Data appear Lognormal at 5% Significance Level**	
Theta Star	5.93		
nu star	27.14		
A-D Test Statistic	3.316	**Nonparametric Statistics**	
5% A-D Critical Value	0.871	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.871	Mean	0.896
5% K-S Critical Value	0.138	SD	4.757
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.507
		95% KM (t) UCL	1.738
Assuming Gamma Distribution		95% KM (z) UCL	1.73
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.734
Minimum	0.000001	95% KM (bootstrap t) UCL	4.866
Maximum	44	95% KM (BCA) UCL	1.826
Mean	0.894	95% KM (Percentile Bootstrap) UCL	1.845
Median	0.0075	95% KM (Chebyshev) UCL	3.105
SD	4.784	97.5% KM (Chebyshev) UCL	4.06
k star	0.114	99% KM (Chebyshev) UCL	5.937
Theta star	7.835		
Nu star	20.54	**Potential UCLs to Use**	
AppChi2	11.25	**97.5% KM (Chebyshev) UCL**	**4.06**
95% Gamma Approximate UCL (Use when n >= 40)	1.632		
95% Adjusted Gamma UCL (Use when n < 40)	1.649		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

alpha-BHC

General Statistics

Number of Valid Data	76	Number of Detected Data	24
Number of Distinct Detected Data	24	Number of Non-Detect Data	52
		Percent Non-Detects	68.42%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00155	Minimum Detected	-6.467
Maximum Detected	41	Maximum Detected	3.714
Mean of Detected	2.241	Mean of Detected	-2.637
SD of Detected	8.379	SD of Detected	2.649
Minimum Non-Detect	0.0005	Minimum Non-Detect	-7.601
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	67
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	88.16%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.291	Shapiro Wilk Test Statistic	0.961
5% Shapiro Wilk Critical Value	0.916	5% Shapiro Wilk Critical Value	0.916
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.711	Mean	-5.106
SD	4.757	SD	2.462
95% DL/2 (t) UCL	1.619	95% H-Stat (DL/2) UCL	0.395
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-7.856
		SD in Log Scale	4.469
		Mean in Original Scale	0.708
		SD in Original Scale	4.757
		95% t UCL	1.617
		95% Percentile Bootstrap UCL	1.754
		95% BCA Bootstrap UCL	2.471
		95% H-UCL	290.9
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.213	Data appear Lognormal at 5% Significance Level	
Theta Star	10.52		
nu star	10.23		
A-D Test Statistic	2.354	**Nonparametric Statistics**	
5% A-D Critical Value	0.889	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.889	Mean	0.709
5% K-S Critical Value	0.197	SD	4.725
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.554
		95% KM (t) UCL	1.631
Assuming Gamma Distribution		95% KM (z) UCL	1.62
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.618
Minimum	0.000001	95% KM (bootstrap t) UCL	11.74
Maximum	41	95% KM (BCA) UCL	1.812
Mean	0.708	95% KM (Percentile Bootstrap) UCL	1.769
Median	0.000001	95% KM (Chebyshev) UCL	3.123
SD	4.757	97.5% KM (Chebyshev) UCL	4.167
k star	0.089	99% KM (Chebyshev) UCL	6.218
Theta star	7.954		
Nu star	13.53	**Potential UCLs to Use**	
AppChi2	6.248	**97.5% KM (Chebyshev) UCL**	**4.167**
95% Gamma Approximate UCL (Use when n >= 40)	1.532		
95% Adjusted Gamma UCL (Use when n < 40)	1.556		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

beta-BHC

General Statistics

Number of Valid Data	43	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	25
		Percent Non-Detects	58.14%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00165	Minimum Detected	-6.406
Maximum Detected	10.81	Maximum Detected	2.38
Mean of Detected	1.587	Mean of Detected	-2.146
SD of Detected	3.413	SD of Detected	2.682
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.096	Maximum Non-Detect	-2.343

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	35
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.40%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.516	Shapiro Wilk Test Statistic	0.957
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.666	Mean	-4.709
SD	2.311	SD	2.857
95% DL/2 (t) UCL	1.259	95% H-Stat (DL/2) UCL	4.707
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.695
		SD in Log Scale	3.763
		Mean in Original Scale	0.665
		SD in Original Scale	2.311
		95% t UCL	1.258
		95% Percentile Bootstrap UCL	1.278
		95% BCA Bootstrap UCL	1.576
		95% H-UCL	157.9

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.261	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	6.076		
nu star	9.406		
A-D Test Statistic	0.985	Nonparametric Statistics	
5% A-D Critical Value	0.855	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.855	Mean	0.666
5% K-S Critical Value	0.222	SD	2.284
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.358
		95% KM (t) UCL	1.268
Assuming Gamma Distribution		95% KM (z) UCL	1.255
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.257
Minimum	0.000001	95% KM (bootstrap t) UCL	2.949
Maximum	10.81	95% KM (BCA) UCL	1.417
Mean	0.665	95% KM (Percentile Bootstrap) UCL	1.296
Median	0.000001	95% KM (Chebyshev) UCL	2.228
SD	2.311	97.5% KM (Chebyshev) UCL	2.904
k star	0.105	99% KM (Chebyshev) UCL	4.232
Theta star	6.351		
Nu star	8.998	Potential UCLs to Use	
AppChi2	3.326	**95% KM (t) UCL**	**1.268**
95% Gamma Approximate UCL (Use when n >= 40)	1.798		
95% Adjusted Gamma UCL (Use when n < 40)	1.865		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Chlordane

General Statistics

Number of Valid Data	179	Number of Detected Data	74
Number of Distinct Detected Data	68	Number of Non-Detect Data	105
		Percent Non-Detects	58.66%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.00064621	Minimum Detected	-7.344
Maximum Detected	191	Maximum Detected	5.252
Mean of Detected	3.74	Mean of Detected	-2.422
SD of Detected	22.59	SD of Detected	2.58
Minimum Non-Detect	0.0005	Minimum Non-Detect	-7.601
Maximum Non-Detect	0.505	Maximum Non-Detect	-0.683

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	161
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	89.94%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Lilliefors Test Statistic	0.459	Lilliefors Test Statistic	0.0589
5% Lilliefors Critical Value	0.103	5% Lilliefors Critical Value	0.103
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.554	Mean	-3.978
SD	14.58	SD	2.323
95% DL/2 (t) UCL	3.356	95% H-Stat (DL/2) UCL	0.519
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.298
		SD in Log Scale	3.341
		Mean in Original Scale	1.548
		SD in Original Scale	14.59
		95% t UCL	3.35
		95% Percentile Bootstrap UCL	3.658
		95% BCA Bootstrap UCL	5.327
		95% H-UCL	4.488
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.198	**Data appear Lognormal at 5% Significance Level**	
Theta Star	18.87		
nu star	29.33		
A-D Test Statistic	8.336	**Nonparametric Statistics**	
5% A-D Critical Value	0.912	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.912	Mean	1.548
5% K-S Critical Value	0.115	SD	14.54
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.095
		95% KM (t) UCL	3.358
Assuming Gamma Distribution		95% KM (z) UCL	3.348
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.35
Minimum	0.000001	95% KM (bootstrap t) UCL	14.23
Maximum	191	95% KM (BCA) UCL	3.669
Mean	1.546	95% KM (Percentile Bootstrap) UCL	3.633
Median	0.000001	95% KM (Chebyshev) UCL	6.319
SD	14.59	97.5% KM (Chebyshev) UCL	8.383
k star	0.0889	99% KM (Chebyshev) UCL	12.44
Theta star	17.39		
Nu star	31.83	**Potential UCLs to Use**	
AppChi2	19.93	**97.5% KM (Chebyshev) UCL**	**8.383**
95% Gamma Approximate UCL (Use when n >= 40)	2.468		
95% Adjusted Gamma UCL (Use when n < 40)	2.478		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

DDD

General Statistics

Number of Valid Data	125	Number of Detected Data	25
Number of Distinct Detected Data	25	Number of Non-Detect Data	100
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00174	Minimum Detected	-6.356
Maximum Detected	57	Maximum Detected	4.043
Mean of Detected	3.502	Mean of Detected	-2.242
SD of Detected	11.56	SD of Detected	2.963
Minimum Non-Detect	0.0021	Minimum Non-Detect	-6.166
Maximum Non-Detect	0.153	Maximum Non-Detect	-1.877

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	115
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.339	Shapiro Wilk Test Statistic	0.953
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.708	Mean	-4.426
SD	5.275	SD	1.879
95% DL/2 (t) UCL	1.49	95% H-Stat (DL/2) UCL	0.118
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-7.326
		SD in Log Scale	3.886
		Mean in Original Scale	0.703
		SD in Original Scale	5.275
		95% t UCL	1.485
		95% Percentile Bootstrap UCL	1.642
		95% BCA Bootstrap UCL	2.453
		95% H-UCL	9.061

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.211	Data appear Lognormal at 5% Significance Level	
Theta Star	16.63		
nu star	10.53		
A-D Test Statistic	1.763	**Nonparametric Statistics**	
5% A-D Critical Value	0.892	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.892	Mean	0.703
5% K-S Critical Value	0.193	SD	5.254
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.48
		95% KM (t) UCL	1.498
Assuming Gamma Distribution		95% KM (z) UCL	1.492
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.484
Minimum	0.000001	95% KM (bootstrap t) UCL	5.152
Maximum	57	95% KM (BCA) UCL	1.57
Mean	0.729	95% KM (Percentile Bootstrap) UCL	1.566
Median	0.000001	95% KM (Chebyshev) UCL	2.793
SD	5.275	97.5% KM (Chebyshev) UCL	3.698
k star	0.0813	99% KM (Chebyshev) UCL	5.475
Theta star	8.972		
Nu star	20.32	**Potential UCLs to Use**	
AppChi2	11.08	**97.5% KM (Chebyshev) UCL**	**3.698**
95% Gamma Approximate UCL (Use when n >= 40)	1.336		
95% Adjusted Gamma UCL (Use when n < 40)	1.346		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

DDE

General Statistics

Number of Valid Data	165	Number of Detected Data	48
Number of Distinct Detected Data	46	Number of Non-Detect Data	117
		Percent Non-Detects	70.91%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00167	Minimum Detected	-6.396
Maximum Detected	17	Maximum Detected	2.833
Mean of Detected	1.053	Mean of Detected	-2.658
SD of Detected	3.217	SD of Detected	2.41
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.19	Maximum Non-Detect	-1.661

Note: Data have multiple DLs - Use of KM Method is recommended
For all methods (except KM, DL/2, and ROS Methods),
Observations < Largest ND are treated as NDs

Number treated as Non-Detect	149
Number treated as Detected	16
Single DL Non-Detect Percentage	90.30%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.367	Shapiro Wilk Test Statistic	0.945
5% Shapiro Wilk Critical Value	0.947	5% Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.312	Mean	-4.635
SD	1.787	SD	2.107
95% DL/2 (t) UCL	0.542	95% H-Stat (DL/2) UCL	0.154
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-7.255
		SD in Log Scale	3.984
		Mean in Original Scale	0.307
		SD in Original Scale	1.788
		95% t UCL	0.538
		95% Percentile Bootstrap UCL	0.557
		95% BCA Bootstrap UCL	0.66
		95% H-UCL	11.5

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.258	Data do not follow a Discernable Distribution (0.05)	
Theta Star	4.081		
nu star	24.77		
A-D Test Statistic	3.437	**Nonparametric Statistics**	
5% A-D Critical Value	0.88	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.88	Mean	0.308
5% K-S Critical Value	0.14	SD	1.782
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.14
		95% KM (t) UCL	0.54
Assuming Gamma Distribution		95% KM (z) UCL	0.539
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.538
Minimum	0.000001	95% KM (bootstrap t) UCL	1.167
Maximum	17	95% KM (BCA) UCL	0.584
Mean	0.308	95% KM (Percentile Bootstrap) UCL	0.575
Median	0.000001	95% KM (Chebyshev) UCL	0.92
SD	1.788	97.5% KM (Chebyshev) UCL	1.184
k star	0.0915	99% KM (Chebyshev) UCL	1.703
Theta star	3.372		
Nu star	30.19	**Potential UCLs to Use**	
AppChi2	18.64	**97.5% KM (Chebyshev) UCL**	**1.184**
95% Gamma Approximate UCL (Use when n >= 40)	0.5		
95% Adjusted Gamma UCL (Use when n < 40)	0.502		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

DDT

General Statistics

Number of Valid Data	165	Number of Detected Data	75
Number of Distinct Detected Data	75	Number of Non-Detect Data	90
		Percent Non-Detects	54.55%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0036	Minimum Detected	-5.627
Maximum Detected	555	Maximum Detected	6.319
Mean of Detected	19.16	Mean of Detected	-0.764
SD of Detected	81.86	SD of Detected	2.826
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.022	Maximum Non-Detect	-3.817

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	98
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	67
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	59.39%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.407	Lilliefors Test Statistic	0.12
5% Lilliefors Critical Value	0.102	5% Lilliefors Critical Value	0.102
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	8.713	Mean	-3.377
SD	55.82	SD	3.159
95% DL/2 (t) UCL	15.9	95% H-Stat (DL/2) UCL	15.64
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.001
		SD in Log Scale	4.764
		Mean in Original Scale	8.71
		SD in Original Scale	55.82
		95% t UCL	15.9
		95% Percentile Bootstrap UCL	16.7
		95% BCA Bootstrap UCL	20.43
		95% H-UCL	6849
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.199	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	96.17		
nu star	29.89		
A-D Test Statistic	6.527	**Nonparametric Statistics**	
5% A-D Critical Value	0.912	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.912	Mean	8.712
5% K-S Critical Value	0.114	SD	55.65
Data not Gamma Distributed at 5% Significance Level		SE of Mean	4.361
		95% KM (t) UCL	15.93
Assuming Gamma Distribution		95% KM (z) UCL	15.89
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	15.9
Minimum	0.000001	95% KM (bootstrap t) UCL	42.76
Maximum	555	95% KM (BCA) UCL	16.16
Mean	8.71	95% KM (Percentile Bootstrap) UCL	16.61
Median	0.000001	95% KM (Chebyshev) UCL	27.72
SD	55.82	97.5% KM (Chebyshev) UCL	35.95
k star	0.0852	99% KM (Chebyshev) UCL	52.1
Theta star	102.2		
Nu star	28.13	**Potential UCLs to Use**	
AppChi2	17.03	**97.5% KM (Chebyshev) UCL**	**35.95**
95% Gamma Approximate UCL (Use when n >= 40)	14.39		
95% Adjusted Gamma UCL (Use when n < 40)	14.45		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Dieldrin

General Statistics

Number of Valid Data	125	Number of Detected Data	21
Number of Distinct Detected Data	21	Number of Non-Detect Data	104
		Percent Non-Detects	83.20%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.00189	Minimum Detected	-6.271
Maximum Detected	6.6	Maximum Detected	1.887
Mean of Detected	0.841	Mean of Detected	-3.136
SD of Detected	2.009	SD of Detected	2.613
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	117
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.60%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.466	Shapiro Wilk Test Statistic	0.897
5% Shapiro Wilk Critical Value	0.908	5% Shapiro Wilk Critical Value	0.908
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.149	Mean	-4.732
SD	0.865	SD	1.619
95% DL/2 (t) UCL	0.277	95% H-Stat (DL/2) UCL	0.0493
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-7.823
		SD in Log Scale	3.609
		Mean in Original Scale	0.145
		SD in Original Scale	0.866
		95% t UCL	0.273
		95% Percentile Bootstrap UCL	0.281
		95% BCA Bootstrap UCL	0.353
		95% H-UCL	1.507
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.238	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	3.527		
nu star	10.02		
A-D Test Statistic	1.967	**Nonparametric Statistics**	
5% A-D Critical Value	0.872	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.872	Mean	0.144
5% K-S Critical Value	0.208	SD	0.863
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0791
		95% KM (t) UCL	0.275
Assuming Gamma Distribution		95% KM (z) UCL	0.274
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.272
Minimum	0.000001	95% KM (bootstrap t) UCL	1.829
Maximum	6.6	95% KM (BCA) UCL	0.277
Mean	0.202	95% KM (Percentile Bootstrap) UCL	0.28
Median	0.000001	95% KM (Chebyshev) UCL	0.489
SD	0.885	97.5% KM (Chebyshev) UCL	0.638
k star	0.0929	99% KM (Chebyshev) UCL	0.931
Theta star	2.178		
Nu star	23.24	**Potential UCLs to Use**	
AppChi2	13.27	**97.5% KM (Chebyshev) UCL**	**0.638**
95% Gamma Approximate UCL (Use when n >= 40)	0.355		
95% Adjusted Gamma UCL (Use when n < 40)	0.357		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

gamma-BHC (Lindane)

General Statistics

Number of Valid Data	166	Number of Detected Data	62
Number of Distinct Detected Data	56	Number of Non-Detect Data	104
		Percent Non-Detects	62.65%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00068805	Minimum Detected	-7.282
Maximum Detected	19	Maximum Detected	2.944
Mean of Detected	0.531	Mean of Detected	-2.969
SD of Detected	2.449	SD of Detected	1.961
Minimum Non-Detect	0.0002	Minimum Non-Detect	-8.517
Maximum Non-Detect	5.15	Maximum Non-Detect	1.639

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	165
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	99.40%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.42	Lilliefors Test Statistic	0.061
5% Lilliefors Critical Value	0.113	5% Lilliefors Critical Value	0.113
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.216	Mean	-5.221
SD	1.522	SD	2.443
95% DL/2 (t) UCL	0.411	95% H-Stat (DL/2) UCL	0.217
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.347
		SD in Log Scale	3.247
		Mean in Original Scale	0.199
		SD in Original Scale	1.511
		95% t UCL	0.393
		95% Percentile Bootstrap UCL	0.419
		95% BCA Bootstrap UCL	0.64
		95% H-UCL	1.125
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.292	**Data appear Lognormal at 5% Significance Level**	
Theta Star	1.815		
nu star	36.25		
A-D Test Statistic	5.659	**Nonparametric Statistics**	
5% A-D Critical Value	0.866	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.866	Mean	0.199
5% K-S Critical Value	0.123	SD	1.507
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.118
		95% KM (t) UCL	0.394
Assuming Gamma Distribution		95% KM (z) UCL	0.393
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.393
Minimum	0.000001	95% KM (bootstrap t) UCL	1.117
Maximum	19	95% KM (BCA) UCL	0.434
Mean	0.198	95% KM (Percentile Bootstrap) UCL	0.43
Median	0.000001	95% KM (Chebyshev) UCL	0.713
SD	1.511	97.5% KM (Chebyshev) UCL	0.936
k star	0.102	99% KM (Chebyshev) UCL	1.373
Theta star	1.944		
Nu star	33.85	**Potential UCLs to Use**	
AppChi2	21.54	**95% KM (Chebyshev) UCL**	**0.713**
95% Gamma Approximate UCL (Use when n >= 40)	0.311		
95% Adjusted Gamma UCL (Use when n < 40)	0.313		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Heptachlor

General Statistics

Number of Valid Data	165	Number of Detected Data	49
Number of Distinct Detected Data	44	Number of Non-Detect Data	116
		Percent Non-Detects	70.30%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.00056508	Minimum Detected	-7.479
Maximum Detected	6.2	Maximum Detected	1.825
Mean of Detected	0.391	Mean of Detected	-3.381
SD of Detected	1.135	SD of Detected	2.108
Minimum Non-Detect	0.0002	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	152
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	13
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.12%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.399	Shapiro Wilk Test Statistic	0.932
5% Shapiro Wilk Critical Value	0.947	5% Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level		**Data not Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.118	Mean	-5.601
SD	0.639	SD	2.114
95% DL/2 (t) UCL	0.201	95% H-Stat (DL/2) UCL	0.0597
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-7.922
		SD in Log Scale	3.749
		Mean in Original Scale	0.116
		SD in Original Scale	0.64
		95% t UCL	0.199
		95% Percentile Bootstrap UCL	0.21
		95% BCA Bootstrap UCL	0.255
		95% H-UCL	1.963
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.281	**Data do not follow a Discernable Distribution (0.05)**	
Theta Star	1.392		
nu star	27.53		
A-D Test Statistic	5.117	**Nonparametric Statistics**	
5% A-D Critical Value	0.869	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.869	Mean	0.117
5% K-S Critical Value	0.138	SD	0.638
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0502
		95% KM (t) UCL	0.2
Assuming Gamma Distribution		95% KM (z) UCL	0.199
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.199
Minimum	0.000001	95% KM (bootstrap t) UCL	0.278
Maximum	6.2	95% KM (BCA) UCL	0.223
Mean	0.116	95% KM (Percentile Bootstrap) UCL	0.205
Median	0.000001	95% KM (Chebyshev) UCL	0.335
SD	0.64	97.5% KM (Chebyshev) UCL	0.43
k star	0.0977	99% KM (Chebyshev) UCL	0.616
Theta star	1.189		
Nu star	32.24	**Potential UCLs to Use**	
AppChi2	20.26	**97.5% KM (Chebyshev) UCL**	**0.43**
95% Gamma Approximate UCL (Use when n >= 40)	0.185		
95% Adjusted Gamma UCL (Use when n < 40)	0.186		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

Toxaphene

General Statistics

Number of Valid Data	165	Number of Detected Data	28
Number of Distinct Detected Data	28	Number of Non-Detect Data	137
		Percent Non-Detects	83.03%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.118	Minimum Detected	-2.137
Maximum Detected	592	Maximum Detected	6.384
Mean of Detected	35.56	Mean of Detected	0.925
SD of Detected	119.5	SD of Detected	2.195
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298
Maximum Non-Detect	4.322	Maximum Non-Detect	1.464

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	153
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.73%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.33	Shapiro Wilk Test Statistic	0.945
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.149	Mean	-2.381
SD	50.28	SD	2.267
95% DL/2 (t) UCL	12.62	95% H-Stat (DL/2) UCL	2.245
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-6.23
		SD in Log Scale	4.498
		Mean in Original Scale	6.044
		SD in Original Scale	50.29
		95% t UCL	12.52
		95% Percentile Bootstrap UCL	13.02
		95% BCA Bootstrap UCL	18.58
		95% H-UCL	451.4
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.261	**Data appear Lognormal at 5% Significance Level**	
Theta Star	136.2		
nu star	14.62		
A-D Test Statistic	2.798	**Nonparametric Statistics**	
5% A-D Critical Value	0.869	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.869	Mean	6.137
5% K-S Critical Value	0.181	SD	50.12
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.974
		95% KM (t) UCL	12.71
Assuming Gamma Distribution		95% KM (z) UCL	12.67
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	12.61
Minimum	0.000001	95% KM (bootstrap t) UCL	81.32
Maximum	592	95% KM (BCA) UCL	12.84
Mean	6.035	95% KM (Percentile Bootstrap) UCL	14.47
Median	0.000001	95% KM (Chebyshev) UCL	23.46
SD	50.29	97.5% KM (Chebyshev) UCL	30.95
k star	0.0679	99% KM (Chebyshev) UCL	45.68
Theta star	88.85		
Nu star	22.41	**Potential UCLs to Use**	
AppChi2	12.65	**97.5% KM (Chebyshev) UCL**	**30.95**
95% Gamma Approximate UCL (Use when n >= 40)	10.69		
95% Adjusted Gamma UCL (Use when n < 40)	10.75		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

delta-BHC

General Statistics

Number of Valid Data	43	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	30
		Percent Non-Detects	69.77%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00059333	Minimum Detected	-7.43
Maximum Detected	0.693	Maximum Detected	-0.367
Mean of Detected	0.146	Mean of Detected	-3.34
SD of Detected	0.214	SD of Detected	2.106
Minimum Non-Detect	0.00182	Minimum Non-Detect	-6.307
Maximum Non-Detect	10.3	Maximum Non-Detect	2.332

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	43
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.721	Shapiro Wilk Test Statistic	0.958
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.166	Mean	-5.356
SD	0.789	SD	2.277
95% DL/2 (t) UCL	0.369	95% H-Stat (DL/2) UCL	0.263
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.604
		SD in Log Scale	2.724
		Mean in Original Scale	0.0445
		SD in Original Scale	0.133
		95% t UCL	0.0786
		95% Percentile Bootstrap UCL	0.0804
		95% BCA Bootstrap UCL	0.0946
		95% H-UCL	0.404

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.402	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.362		
nu star	10.45		
A-D Test Statistic	0.353	**Nonparametric Statistics**	
5% A-D Critical Value	0.799	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.799	Mean	0.0457
5% K-S Critical Value	0.251	SD	0.133
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0213
		95% KM (t) UCL	0.0816
Assuming Gamma Distribution		95% KM (z) UCL	0.0808
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0792
Minimum	0.000001	95% KM (bootstrap t) UCL	0.111
Maximum	0.693	95% KM (BCA) UCL	0.0931
Mean	0.044	95% KM (Percentile Bootstrap) UCL	0.0838
Median	0.000001	95% KM (Chebyshev) UCL	0.139
SD	0.133	97.5% KM (Chebyshev) UCL	0.179
k star	0.115	99% KM (Chebyshev) UCL	0.258
Theta star	0.383		
Nu star	9.892	**Potential UCLs to Use**	
AppChi2	3.874	**95% KM (t) UCL**	**0.0816**
95% Gamma Approximate UCL (Use when n >= 40)	0.112		
95% Adjusted Gamma UCL (Use when n < 40)	0.116		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Prepared/Date: LWC 7/9/12
Checked/Date: LMS 7/10/12

ProUCL Output of BFEL Subsurface Soils - VOCs and SVOCs

Benzo(a)pyrene

General Statistics			
Number of Valid Data	9	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	5
		Percent Non-Detects	55.56%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	3.8	Maximum Detected	1.335
Mean of Detected	0.989	Mean of Detected	-2.583
SD of Detected	1.875	SD of Detected	3.111
Minimum Non-Detect	0.0022	Minimum Non-Detect	-6.119
Maximum Non-Detect	0.67	Maximum Non-Detect	-0.4

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	1
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	88.89%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.653	Shapiro Wilk Test Statistic	0.992
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.507	Mean	-3.688
SD	1.241	SD	3.072
95% DL/2 (t) UCL	1.276	95% H-Stat (DL/2) UCL	30044
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.507
		SD in Log Scale	2.817
		Mean in Original Scale	0.442
		SD in Original Scale	1.26
		95% t UCL	1.223
		95% Percentile Bootstrap UCL	1.272
		95% BCA Bootstrap UCL	1.704
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.235	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4.213		
nu star	1.878		
A-D Test Statistic	0.36	Nonparametric Statistics	
5% A-D Critical Value	0.712	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.712	Mean	0.446
5% K-S Critical Value	0.42	SD	1.186
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.457
		95% KM (t) UCL	1.296
Assuming Gamma Distribution		95% KM (z) UCL	1.198
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.216
Minimum	1.00E-12	95% KM (bootstrap t) UCL	24.86
Maximum	3.8	95% KM (BCA) UCL	N/A
Mean	1.712	95% KM (Percentile Bootstrap) UCL	1.347
Median	0.313	95% KM (Chebyshev) UCL	2.437
SD	1.922	97.5% KM (Chebyshev) UCL	3.299
k star	0.187	99% KM (Chebyshev) UCL	4.991
Theta star	9.148		
Nu star	3.369	**Potential UCLs to Use**	
AppChi2	0.49	**95% KM (t) UCL**	**1.296**
95% Gamma Approximate UCL	11.78		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(b)fluoranthene

General Statistics			
Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0054	Minimum Detected	-5.221
Maximum Detected	2.2	Maximum Detected	0.788
Mean of Detected	0.746	Mean of Detected	-2.605
SD of Detected	1.259	SD of Detected	3.079
Minimum Non-Detect	0.0054	Minimum Non-Detect	-5.221
Maximum Non-Detect	0.0056	Maximum Non-Detect	-5.185

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk Test Statistic	0.952
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.375	Mean	-4.254
SD	0.894	SD	2.656
95% DL/2 (t) UCL	1.11	95% H-Stat (DL/2) UCL	80832
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.329
		SD in Log Scale	4.658
		Mean in Original Scale	0.373
		SD in Original Scale	0.895
		95% t UCL	1.11
		95% Percentile Bootstrap UCL	1.1
		95% BCA Bootstrap UCL	1.112
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Lognormal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.376
5% K-S Critical Value	N/A	SD	0.816
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.408
		95% KM (t) UCL	1.198
Assuming Gamma Distribution		95% KM (z) UCL	1.047
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.103
Minimum	N/A	95% KM (bootstrap t) UCL	30.07
Maximum	N/A	95% KM (BCA) UCL	2.2
Mean	N/A	95% KM (Percentile Bootstrap) UCL	2.2
Median	N/A	95% KM (Chebyshev) UCL	2.154
SD	N/A	97.5% KM (Chebyshev) UCL	2.923
k star	N/A	99% KM (Chebyshev) UCL	4.435
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	**99% KM (Chebyshev) UCL**	**4.435**
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Benzo(k)fluoranthene

General Statistics			
Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	1.3	Maximum Detected	0.262
Mean of Detected	0.438	Mean of Detected	-3.442
SD of Detected	0.747	SD of Detected	3.324
Minimum Non-Detect	0.0022	Minimum Non-Detect	-6.119
Maximum Non-Detect	0.0022	Maximum Non-Detect	-6.119

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.756	Shapiro Wilk Test Statistic	0.935
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.22	Mean	-5.127
SD	0.529	SD	2.798
95% DL/2 (t) UCL	0.655	95% H-Stat (DL/2) UCL	182167
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.115
		SD in Log Scale	2.977
		Mean in Original Scale	0.22
		SD in Original Scale	0.529
		95% t UCL	0.655
		95% Percentile Bootstrap UCL	0.651
		95% BCA Bootstrap UCL	0.654
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Lognormal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.22
5% K-S Critical Value	N/A	SD	0.483
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.241
		95% KM (t) UCL	0.707
Assuming Gamma Distribution		95% KM (z) UCL	0.617
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.652
Minimum	N/A	95% KM (bootstrap t) UCL	30.25
Maximum	N/A	95% KM (BCA) UCL	1.3
Mean	N/A	95% KM (Percentile Bootstrap) UCL	1.3
Median	N/A	95% KM (Chebyshev) UCL	1.273
SD	N/A	97.5% KM (Chebyshev) UCL	1.728
k star	N/A	99% KM (Chebyshev) UCL	2.623
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	**99% KM (Chebyshev) UCL**	**2.623**
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

Chrysene

General Statistics			
Number of Valid Data	9	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	6
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.056	Minimum Detected	-2.882
Maximum Detected	5.5	Maximum Detected	1.705
Mean of Detected	1.939	Mean of Detected	-0.842
SD of Detected	3.086	SD of Detected	2.335
Minimum Non-Detect	0.032	Minimum Non-Detect	-3.442
Maximum Non-Detect	0.67	Maximum Non-Detect	-0.4

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	88.89%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
However, results obtained using 4 to 9 distinct values may not be reliable.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.778	Shapiro Wilk Test Statistic	0.965
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.72	Mean	-2.377
SD	1.797	SD	2.024
95% DL/2 (t) UCL	1.834	95% H-Stat (DL/2) UCL	44.73
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.668
		SD in Log Scale	3.315
		Mean in Original Scale	0.648
		SD in Original Scale	1.821
		95% t UCL	1.777
		95% Percentile Bootstrap UCL	1.835
		95% BCA Bootstrap UCL	2.481
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	N/A	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.691
5% K-S Critical Value	N/A	SD	1.702
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.695
		95% KM (t) UCL	1.983
Assuming Gamma Distribution		95% KM (z) UCL	1.834
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.739
Minimum	N/A	95% KM (bootstrap t) UCL	14.21
Maximum	N/A	95% KM (BCA) UCL	5.5
Mean	N/A	95% KM (Percentile Bootstrap) UCL	5.5
Median	N/A	95% KM (Chebyshev) UCL	3.72
SD	N/A	97.5% KM (Chebyshev) UCL	5.031
k star	N/A	99% KM (Chebyshev) UCL	7.606
Theta star	N/A		
Nu star	N/A	**Potential UCLs to Use**	
AppChi2	N/A	**95% KM (t) UCL**	**1.983**
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	5.5
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006)
For additional insight, the user may want to consult a statistician.

Prepared/Date: MDH 10/13/10
Checked/Date: MKB 10/18/10

CSX PROPERTY DATA

ProUCL Output for CSX Surface Soils - Metals

Arsenic

General Statistics			
Number of Valid Data	50	Number of Detected Data	43
Number of Distinct Detected Data	40	Number of Non-Detect Data	7
		Percent Non-Detects	14.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.2	Minimum Detected	0.182
Maximum Detected	1547	Maximum Detected	7.344
Mean of Detected	70.97	Mean of Detected	2.667
SD of Detected	244.2	SD of Detected	1.509
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	23	Maximum Non-Detect	3.135
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	36
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	14
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.298	Shapiro Wilk Test Statistic	0.952
5% Shapiro Wilk Critical Value	0.943	5% Shapiro Wilk Critical Value	0.943
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	61.37	Mean	2.228
SD	227.4	SD	1.965
95% DL/2 (t) UCL	115.3	95% H-Stat (DL/2) UCL	174.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.288
		SD in Log Scale	1.724
		Mean in Original Scale	61.24
		SD in Original Scale	227.4
		95% t UCL	115.2
		95% Percentile Bootstrap UCL	122.1
		95% BCA Bootstrap UCL	162.7
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.398	Data appear Lognormal at 5% Significance Level	
Theta Star	178.5		
nu star	34.19		
A-D Test Statistic	4.28	Nonparametric Statistics	
5% A-D Critical Value	0.834	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.834	Mean	61.35
5% K-S Critical Value	0.144	SD	225.1
Data not Gamma Distributed at 5% Significance Level		SE of Mean	32.21
		95% KM (t) UCL	115.4
Assuming Gamma Distribution		95% KM (z) UCL	114.3
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	115.3
Minimum	1.00E-12	95% KM (bootstrap t) UCL	336.6
Maximum	1547	95% KM (BCA) UCL	125.8
Mean	61.03	95% KM (Percentile Bootstrap) UCL	122.1
Median	8.74	95% KM (Chebyshev) UCL	201.8
SD	227.5	97.5% KM (Chebyshev) UCL	262.5
k star	0.142	99% KM (Chebyshev) UCL	381.9
Theta star	429.6		
Nu star	14.21	Potential UCLs to Use	
AppChi2	6.713	**97.5% KM (Chebyshev) UCL**	**262.5**
95% Gamma Approximate UCL	129.2		
95% Adjusted Gamma UCL	132.2		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

Lead

General Statistics			
Number of Valid Observations	29	Number of Distinct Observations	28
Raw Statistics		Log-transformed Statistics	
Minimum	0.0151	Minimum of Log Data	-4.193
Maximum	4000	Maximum of Log Data	8.294
Mean	**264**	Mean of log Data	3.991
Median	65	SD of log Data	2.192
SD	738.1		
Coefficient of Variation	2.796		
Skewness	4.961		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.35	Shapiro Wilk Test Statistic	0.872
Shapiro Wilk Critical Value	0.926	Shapiro Wilk Critical Value	0.926
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	497.1	95% H-UCL	3424
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1606
95% Adjusted-CLT UCL (Chen-1995)	624.3	97.5% Chebyshev (MVUE) UCL	2096
95% Modified-t UCL (Johnson-1978)	518.2	99% Chebyshev (MVUE) UCL	3060
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.393	Data do not follow a Discernable Distribution (0.05)	
Theta Star	671.2		
MLE of Mean	264		
MLE of Standard Deviation	420.9		
nu star	22.81		
Approximate Chi Square Value (.05)	12.95	Nonparametric Statistics	
Adjusted Level of Significance	0.0407	95% CLT UCL	489.4
Adjusted Chi Square Value	12.5	95% Jackknife UCL	497.1
		95% Standard Bootstrap UCL	490.3
Anderson-Darling Test Statistic	1.264	95% Bootstrap-t UCL	########
Anderson-Darling 5% Critical Value	0.831	95% Hall's Bootstrap UCL	1262
Kolmogorov-Smirnov Test Statistic	0.177	95% Percentile Bootstrap UCL	515.3
Kolmogorov-Smirnov 5% Critical Value	0.174	95% BCA Bootstrap UCL	669.4
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	861.4
		97.5% Chebyshev(Mean, Sd) UCL	1120
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1628
95% Approximate Gamma UCL	465		
95% Adjusted Gamma UCL	481.6		
Potential UCL to Use		Use 97.5% Chebyshev (Mean, Sd) UCL	1120

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)
and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - Pesticides

Alpha, Beta, Delta-BHC

General Statistics			
Number of Valid Data	17	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	10
		Percent Non-Detects	58.82%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.01	Minimum Detected	-4.605
Maximum Detected	0.36	Maximum Detected	-1.022
Mean of Detected	0.122	Mean of Detected	-2.584
SD of Detected	0.121	SD of Detected	116.60%
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.005	Maximum Non-Detect	-5.298
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	58.82%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.851	Shapiro Wilk Test Statistic	0.977
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0506	Mean	-5.915
SD	0.0966	SD	3.033
95% DL/2 (t) UCL	0.0915	95% H-Stat (DL/2) UCL	33.19
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.738
		SD in Log Scale	2.155
		Mean in Original Scale	0.0521
		SD in Original Scale	0.0958
		95% t UCL	0.0927
		95% Percentile Bootstrap UCL	0.0899
		95% BCA Bootstrap UCL	0.11
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.767	Data appear Normal at 5% Significance Level	
Theta Star	0.159		
nu star	10.74		
A-D Test Statistic	0.161	Nonparametric Statistics	
5% A-D Critical Value	0.725	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.725	Mean	0.0562
5% K-S Critical Value	0.319	SD	0.0908
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0238
		95% KM (t) UCL	0.0977
Assuming Gamma Distribution		95% KM (z) UCL	0.0953
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0915
Minimum	0.01	95% KM (bootstrap t) UCL	0.132
Maximum	0.36	95% KM (BCA) UCL	0.129
Mean	0.139	95% KM (Percentile Bootstrap) UCL	0.111
Median	0.11	95% KM (Chebyshev) UCL	0.16
SD	0.0939	97.5% KM (Chebyshev) UCL	0.205
k star	1.632	99% KM (Chebyshev) UCL	0.293
Theta star	0.0853		
Nu star	55.5	Potential UCLs to Use	
AppChi2	39.38	**95% KM (t) UCL**	**0.0977**
95% Gamma Approximate UCL	0.196	**95% KM (Percentile Bootstrap) UCL**	**0.111**
95% Adjusted Gamma UCL	0.204		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - Pesticides

Chlordane

General Statistics			
Number of Valid Data	46	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	34
		Percent Non-Detects	73.91%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0042	Minimum Detected	-5.473
Maximum Detected	67	Maximum Detected	4.205
Mean of Detected	5.79	Mean of Detected	-192.70%
SD of Detected	19.28	SD of Detected	2.601
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	1	Maximum Non-Detect	0
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	45
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.83%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.337	Shapiro Wilk Test Statistic	0.915
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.534	Mean	-4.912
SD	9.868	SD	2.594
95% DL/2 (t) UCL	3.978	95% H-Stat (DL/2) UCL	1.177
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-7.971
		SD in Log Scale	4.351
		Mean in Original Scale	1.511
		SD in Original Scale	9.872
		95% t UCL	3.955
		95% Percentile Bootstrap UCL	4.42
		95% BCA Bootstrap UCL	5.927
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.205	Data appear Lognormal at 5% Significance Level	
Theta Star	28.18		
nu star	4.931		
A-D Test Statistic	1.848	Nonparametric Statistics	
5% A-D Critical Value	0.866	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.866	Mean	1.516
5% K-S Critical Value	0.271	SD	9.763
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.503
		95% KM (t) UCL	4.041
Assuming Gamma Distribution		95% KM (z) UCL	3.989
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.959
Minimum	1.00E-12	95% KM (bootstrap t) UCL	132
Maximum	67	95% KM (BCA) UCL	4.455
Mean	6.035	95% KM (Percentile Bootstrap) UCL	4.428
Median	7.021	95% KM (Chebyshev) UCL	8.07E+00
SD	9.831	97.5% KM (Chebyshev) UCL	10.91
k star	0.211	99% KM (Chebyshev) UCL	16.48
Theta star	28.59		
Nu star	19.42	Potential UCLs to Use	
AppChi2	10.42	**99% KM (Chebyshev) UCL**	**16.48**
95% Gamma Approximate UCL	11.24		
95% Adjusted Gamma UCL	11.48		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - Pesticides

DDD

General Statistics			
Number of Valid Data	41	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	32
		Percent Non-Detects	78.05%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0039	Minimum Detected	-5.547
Maximum Detected	3.7	Maximum Detected	1.308
Mean of Detected	0.449	Mean of Detected	-3.117
SD of Detected	1.22	SD of Detected	203.20%
Minimum Non-Detect	0.0018	Minimum Non-Detect	-6.32
Maximum Non-Detect	0.02	Maximum Non-Detect	-3.912

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	35
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	6
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	85.37%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.415	Shapiro Wilk Test Statistic	0.891
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.102	Mean	-5.382
SD	0.576	SD	173.60%
95% DL/2 (t) UCL	0.253	95% H-Stat (DL/2) UCL	0.0509
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-8.802
		SD in Log Scale	3.692
		Mean in Original Scale	0.0987
		SD in Original Scale	0.577
		95% t UCL	0.25
		95% Percentile Bootstrap UCL	0.278
		95% BCA Bootstrap UCL	0.374
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.273	Data appear Lognormal at 5% Significance Level	
Theta Star	1.645		
nu star	4.911		
A-D Test Statistic	1.328	Nonparametric Statistics	
5% A-D Critical Value	0.808	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.808	Mean	0.102
5% K-S Critical Value	0.302	SD	0.569
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0943
		95% KM (t) UCL	0.26
Assuming Gamma Distribution		95% KM (z) UCL	0.257
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.253
Minimum	1.00E-12	95% KM (bootstrap t) UCL	3.574
Maximum	3.7	95% KM (BCA) UCL	0.301
Mean	0.418	95% KM (Percentile Bootstrap) UCL	0.282
Median	0.44	95% KM (Chebyshev) UCL	0.513
SD	0.555	97.5% KM (Chebyshev) UCL	0.691
k star	0.517	99% KM (Chebyshev) UCL	1.04
Theta star	0.808		
Nu star	42.39	Potential UCLs to Use	
AppChi2	28.47	**99% KM (Chebyshev) UCL**	**1.04**
95% Gamma Approximate UCL	0.622		
95% Adjusted Gamma UCL	0.632		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - Pesticides

DDE

General Statistics			
Number of Valid Data	48	Number of Detected Data	19
Number of Distinct Detected Data	19	Number of Non-Detect Data	29
		Percent Non-Detects	60.42%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0031	Minimum Detected	-5.776
Maximum Detected	24	Maximum Detected	3.178
Mean of Detected	1.59	Mean of Detected	-1.495
SD of Detected	5.438	SD of Detected	1.821
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.022	Maximum Non-Detect	-3.817
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	30
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1800.00%
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	62.50%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.294	Shapiro Wilk Test Statistic	0.945
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.631	Mean	-4.354
SD	3.455	SD	267.90%
95% DL/2 (t) UCL	1.468	95% H-Stat (DL/2) UCL	2.784
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.599
		SD in Log Scale	2.933
		Mean in Original Scale	0.631
		SD in Original Scale	3.456
		95% t UCL	1.468
		95% Percentile Bootstrap UCL	1.624
		95% BCA Bootstrap UCL	2.62
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.325	Data appear Lognormal at 5% Significance Level	
Theta Star	4.893		
nu star	12.35		
A-D Test Statistic	2.146	Nonparametric Statistics	
5% A-D Critical Value	0.834	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.834	Mean	0.631
5% K-S Critical Value	0.214	SD	3.419
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.507
		95% KM (t) UCL	1.482
Assuming Gamma Distribution		95% KM (z) UCL	1.465
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.447
Minimum	0.0031	95% KM (bootstrap t) UCL	9.841
Maximum	24	95% KM (BCA) UCL	2.081
Mean	1.586	95% KM (Percentile Bootstrap) UCL	1.631
Median	1.253	95% KM (Chebyshev) UCL	2.841
SD	3.383	97.5% KM (Chebyshev) UCL	3.798
k star	0.707	99% KM (Chebyshev) UCL	5.676
Theta star	2.244		
Nu star	67.87	Potential UCLs to Use	
AppChi2	49.91	**95% KM (Chebyshev) UCL**	**2.841**
95% Gamma Approximate UCL	2.157		
95% Adjusted Gamma UCL	2.178		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - Pesticides

DDT

General Statistics			
Number of Valid Data	49	Number of Detected Data	27
Number of Distinct Detected Data	27	Number of Non-Detect Data	22
		Percent Non-Detects	44.90%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.014	Minimum Detected	-4.269
Maximum Detected	11.1	Maximum Detected	2.407
Mean of Detected	1.929	Mean of Detected	-0.919
SD of Detected	2.693	SD of Detected	2.241
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.02	Maximum Non-Detect	-3.912
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	24
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	51.02%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.746	Shapiro Wilk Test Statistic	0.898
5% Shapiro Wilk Critical Value	0.923	5% Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.064	Mean	-3.447
SD	2.206	SD	3.295
95% DL/2 (t) UCL	1.592	95% H-Stat (DL/2) UCL	99.92
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.357
		SD in Log Scale	3.27
		Mean in Original Scale	1.064
		SD in Original Scale	220.50%
		95% t UCL	1.592
		95% Percentile Bootstrap UCL	1.62
		95% BCA Bootstrap UCL	1.694
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.394	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4.899		
nu star	21.26		
A-D Test Statistic	0.812	Nonparametric Statistics	
5% A-D Critical Value	0.827	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.827	Mean	1.069
5% K-S Critical Value	0.18	SD	2.18
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.317
		95% KM (t) UCL	1.601
Assuming Gamma Distribution		95% KM (z) UCL	1.591
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.596
Minimum	0.014	95% KM (bootstrap t) UCL	1.841
Maximum	11.1	95% KM (BCA) UCL	1.606
Mean	1.516	95% KM (Percentile Bootstrap) UCL	1.612
Median	0.808	95% KM (Chebyshev) UCL	2.453
SD	2.096	97.5% KM (Chebyshev) UCL	3.051
k star	0.561	99% KM (Chebyshev) UCL	4.227
Theta star	2.703		
Nu star	54.96	Potential UCLs to Use	
AppChi2	38.93	**95% KM (BCA) UCL**	**1.606**
95% Gamma Approximate UCL	2.14		
95% Adjusted Gamma UCL	2.163		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - Pesticides

Dieldrin

General Statistics			
Number of Valid Data	38	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	33
		Percent Non-Detects	86.84%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0099	Minimum Detected	-4.615
Maximum Detected	0.514	Maximum Detected	-0.666
Mean of Detected	0.196	Mean of Detected	-2.222
SD of Detected	0.192	SD of Detected	1.481
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	2.1	Maximum Non-Detect	0.742
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	38
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.875	Shapiro Wilk Test Statistic	0.904
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0616	Mean	-5.226
SD	0.189	SD	199.00%
95% DL/2 (t) UCL	0.113	95% H-Stat (DL/2) UCL	0.132
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.805
		SD in Log Scale	2.285
		Mean in Original Scale	0.0269
		SD in Original Scale	0.092
		95% t UCL	0.0521
		95% Percentile Bootstrap UCL	0.0557
		95% BCA Bootstrap UCL	0.0671
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.524	Data appear Normal at 5% Significance Level	
Theta Star	0.374		
nu star	5.243		
A-D Test Statistic	0.262	Nonparametric Statistics	
5% A-D Critical Value	0.692	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.692	Mean	0.0356
5% K-S Critical Value	0.365	SD	0.09
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0166
		95% KM (t) UCL	0.0636
Assuming Gamma Distribution		95% KM (z) UCL	0.0629
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0847
Minimum	0.0099	95% KM (bootstrap t) UCL	0.0675
Maximum	0.521	95% KM (BCA) UCL	0.207
Mean	0.203	95% KM (Percentile Bootstrap) UCL	0.198
Median	0.177	95% KM (Chebyshev) UCL	0.108
SD	0.126	97.5% KM (Chebyshev) UCL	0.139
k star	2.079	99% KM (Chebyshev) UCL	0.201
Theta star	0.0974		
Nu star	158	Potential UCLs to Use	
AppChi2	129.9	**95% KM (t) UCL**	**0.0636**
95% Gamma Approximate UCL	0.246	**95% KM (Percentile Bootstrap) UCL**	**0.198**
95% Adjusted Gamma UCL	0.248		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
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ProUCL Output for CSX Surface Soils - Pesticides

gamma-BHC (Lindane)

General Statistics			
Number of Valid Data	44	Number of Detected Data	13
Number of Distinct Detected Data	12	Number of Non-Detect Data	31
		Percent Non-Detects	70.45%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.015	Minimum Detected	-4.2
Maximum Detected	1.78	Maximum Detected	0.577
Mean of Detected	0.228	Mean of Detected	-2.642
SD of Detected	0.482	SD of Detected	1.407
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.022	Maximum Non-Detect	-3.817
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	32
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1200.00%
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.73%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.488	Shapiro Wilk Test Statistic	0.881
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0684	Mean	-5.594
SD	0.275	SD	2.218
95% DL/2 (t) UCL	0.138	95% H-Stat (DL/2) UCL	0.168
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-6.074
		SD in Log Scale	2.544
		Mean in Original Scale	0.0679
		SD in Original Scale	0.275
		95% t UCL	0.138
		95% Percentile Bootstrap UCL	0.141
		95% BCA Bootstrap UCL	0.202
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.467	Data appear Lognormal at 5% Significance Level	
Theta Star	0.488		
nu star	12.13		
A-D Test Statistic	1.302	Nonparametric Statistics	
5% A-D Critical Value	0.787	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.787	Mean	0.0779
5% K-S Critical Value	0.249	SD	0.27
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0423
		95% KM (t) UCL	0.149
Assuming Gamma Distribution		95% KM (z) UCL	0.147
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.143
Minimum	0.015	95% KM (bootstrap t) UCL	0.394
Maximum	1.78	95% KM (BCA) UCL	0.167
Mean	0.223	95% KM (Percentile Bootstrap) UCL	0.157
Median	0.235	95% KM (Chebyshev) UCL	0.262
SD	0.261	97.5% KM (Chebyshev) UCL	0.342
k star	1.33	99% KM (Chebyshev) UCL	0.499
Theta star	0.168		
Nu star	117	Potential UCLs to Use	
AppChi2	93.04	**95% KM (BCA) UCL**	**0.167**
95% Gamma Approximate UCL	0.281		
95% Adjusted Gamma UCL	0.283		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
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ProUCL Output for CSX Surface Soils - Pesticides

Heptachlor

General Statistics

Number of Valid Data	48	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	39
		Percent Non-Detects	81.25%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.00902	Minimum Detected	-4.708
Maximum Detected	0.3	Maximum Detected	-1.204
Mean of Detected	0.0566	Mean of Detected	-3.582
SD of Detected	0.093	SD of Detected	1.13
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	1.1	Maximum Non-Detect	0.0953

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	48
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.556	Shapiro Wilk Test Statistic	0.89
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0263	Mean	-5.896
SD	0.0893	SD	1.945
95% DL/2 (t) UCL	0.0479	95% H-Stat (DL/2) UCL	0.0495
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.823
		SD in Log Scale	1.882
		Mean in Original Scale	0.0113
		SD in Original Scale	0.0442
		95% t UCL	0.022
		95% Percentile Bootstrap UCL	0.0231
		95% BCA Bootstrap UCL	0.0316
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.629	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.09		
nu star	11.32		
A-D Test Statistic	0.804	Nonparametric Statistics	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	0.0183
5% K-S Critical Value	0.289	SD	0.0427
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.00662
		95% KM (t) UCL	0.0294
Assuming Gamma Distribution		95% KM (z) UCL	0.0292
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0287
Minimum	0.00902	95% KM (bootstrap t) UCL	0.0628
Maximum	0.3	95% KM (BCA) UCL	0.0352
Mean	0.056	95% KM (Percentile Bootstrap) UCL	0.031
Median	0.0569	95% KM (Chebyshev) UCL	0.0472
SD	0.0387	97.5% KM (Chebyshev) UCL	0.0597
k star	3.574	99% KM (Chebyshev) UCL	0.0842
Theta star	0.0157		
Nu star	343.1	Potential UCLs to Use	
AppChi2	301.2	**95% KM (t) UCL**	**0.0294**
95% Gamma Approximate UCL	0.0638		
95% Adjusted Gamma UCL	0.064		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
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ProUCL Output for CSX Surface Soils - Pesticides

Toxaphene

General Statistics			
Number of Valid Data	48	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	40
		Percent Non-Detects	83.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.071	Minimum Detected	-2.645
Maximum Detected	190	Maximum Detected	5.247
Mean of Detected	25.86	Mean of Detected	0.257
SD of Detected	66.44	SD of Detected	2.617
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298
Maximum Non-Detect	21	Maximum Non-Detect	3.045
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	97.92%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.46	Shapiro Wilk Test Statistic	0.923
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.651	Mean	-2.482
SD	27.41	SD	2.296
95% DL/2 (t) UCL	11.29	95% H-Stat (DL/2) UCL	4.477
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-7.479
		SD in Log Scale	4.098
		Mean in Original Scale	4.311
		SD in Original Scale	2743.00%
		95% t UCL	10.95
		95% Percentile Bootstrap UCL	12.16
		95% BCA Bootstrap UCL	19.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.233	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	111.2		
nu star	3.722		
A-D Test Statistic	0.915	Nonparametric Statistics	
5% A-D Critical Value	0.821	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.821	Mean	4.381
5% K-S Critical Value	0.321	SD	27.13
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	4.186
		95% KM (t) UCL	11.41
Assuming Gamma Distribution		95% KM (z) UCL	11.27
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.95
Minimum	0.071	95% KM (bootstrap t) UCL	226.3
Maximum	190	95% KM (BCA) UCL	12.66
Mean	25.72	95% KM (Percentile Bootstrap) UCL	12.21
Median	22.33	95% KM (Chebyshev) UCL	22.63
SD	26.83	97.5% KM (Chebyshev) UCL	30.53
k star	1.023	99% KM (Chebyshev) UCL	46.04
Theta star	25.14		
Nu star	98.18	Potential UCLs to Use	
AppChi2	76.33	**95% KM (t) UCL**	**11.41**
95% Gamma Approximate UCL	33.08		
95% Adjusted Gamma UCL	33.34		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Benzo(a)anthracene

General Statistics

Number of Valid Data	22	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	15
		Percent Non-Detects	68.18%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.17	Minimum Detected	-1.772
Maximum Detected	1.4	Maximum Detected	0.336
Mean of Detected	0.74	Mean of Detected	-0.486
SD of Detected	0.434	SD of Detected	0.712
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	0.9	Maximum Non-Detect	-10.50%

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	2
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	90.91%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.954	Shapiro Wilk Test Statistic	0.941
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	80.30%
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.406	Mean	-1.128
SD	0.336	SD	0.631
95% DL/2 (t) UCL	0.529	95% H-Stat (DL/2) UCL	0.529
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.244
		SD in Log Scale	0.707
		Mean in Original Scale	38.00%
		SD in Original Scale	0.346
		95% t UCL	0.507
		95% Percentile Bootstrap UCL	0.507
		95% BCA Bootstrap UCL	0.539
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.731	Data appear Normal at 5% Significance Level	
Theta Star	0.428		
nu star	24.23		
A-D Test Statistic	0.206	Nonparametric Statistics	
5% A-D Critical Value	0.713	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.713	Mean	0.388
5% K-S Critical Value	0.314	SD	0.345
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0862
		95% KM (t) UCL	0.537
Assuming Gamma Distribution		95% KM (z) UCL	0.53
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.547
Minimum	0.17	95% KM (bootstrap t) UCL	0.549
Maximum	1.4	95% KM (BCA) UCL	0.815
Mean	0.727	95% KM (Percentile Bootstrap) UCL	0.683
Median	0.719	95% KM (Chebyshev) UCL	0.764
SD	0.236	97.5% KM (Chebyshev) UCL	0.927
k star	7.32	99% KM (Chebyshev) UCL	1.246
Theta star	0.0994		
Nu star	322.1	**Potential UCLs to Use**	
AppChi2	281.5	**95% KM (t) UCL**	**0.537**
95% Gamma Approximate UCL	0.832	95% KM (Percentile Bootstrap) UCL	0.683
95% Adjusted Gamma UCL	0.841		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
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ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Benzo(a)pyrene

General Statistics

Number of Valid Data	22	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	17
		Percent Non-Detects	77.27%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.45	Minimum Detected	-0.799
Maximum Detected	0.9	Maximum Detected	-0.105
Mean of Detected	0.664	Mean of Detected	-0.452
SD of Detected	0.214	SD of Detected	0.328
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	1.2	Maximum Non-Detect	0.182

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	22
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.863
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	76.20%
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.358	Mean	-1.172
SD	0.219	SD	0.522
95% DL/2 (t) UCL	0.438	95% H-Stat (DL/2) UCL	0.446
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.181
		SD in Log Scale	0.468
		Mean in Original Scale	34.60%
		SD in Original Scale	0.204
		95% t UCL	0.421
		95% Percentile Bootstrap UCL	0.417
		95% BCA Bootstrap UCL	0.44
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	4.898	Data appear Normal at 5% Significance Level	
Theta Star	0.136		
nu star	48.98		
A-D Test Statistic	0.445	Nonparametric Statistics	
5% A-D Critical Value	0.679	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.679	Mean	0.504
5% K-S Critical Value	0.358	SD	0.132
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0329
		95% KM (t) UCL	0.56
Assuming Gamma Distribution		95% KM (z) UCL	0.558
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.549
Minimum	0.45	95% KM (bootstrap t) UCL	0.556
Maximum	0.9	95% KM (BCA) UCL	0.874
Mean	0.628	95% KM (Percentile Bootstrap) UCL	0.678
Median	0.624	95% KM (Chebyshev) UCL	0.647
SD	0.12	97.5% KM (Chebyshev) UCL	0.709
k star	26.71	99% KM (Chebyshev) UCL	0.831
Theta star	0.0235		
Nu star	1175	**Potential UCLs to Use**	
AppChi2	1097	**95% KM (t) UCL**	**0.56**
95% Gamma Approximate UCL	0.673	95% KM (Percentile Bootstrap) UCL	0.678
95% Adjusted Gamma UCL	0.677		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
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ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Benzo(b)fluoranthene

General Statistics

Number of Valid Data	18	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	14
		Percent Non-Detects	77.78%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.41	Minimum Detected	-0.892
Maximum Detected	1.6	Maximum Detected	0.47
Mean of Detected	0.943	Mean of Detected	-0.234
SD of Detected	0.599	SD of Detected	0.7
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	0.78	Maximum Non-Detect	-0.248

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	16
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	2
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	88.89%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.854	Shapiro Wilk Test Statistic	0.839
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	74.80%
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.393	Mean	-1.197
SD	0.397	SD	0.637
95% DL/2 (t) UCL	0.556	95% H-Stat (DL/2) UCL	0.517
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.727
		SD in Log Scale	0.979
		Mean in Original Scale	31.10%
		SD in Original Scale	0.433
		95% t UCL	0.489
		95% Percentile Bootstrap UCL	0.491
		95% BCA Bootstrap UCL	0.527
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.921	Data appear Normal at 5% Significance Level	
Theta Star	1.023		
nu star	7.37		
A-D Test Statistic	0.491	Nonparametric Statistics	
5% A-D Critical Value	0.659	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.659	Mean	0.529
5% K-S Critical Value	0.397	SD	0.33
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0898
		95% KM (t) UCL	0.685
Assuming Gamma Distribution		95% KM (z) UCL	0.676
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.65
Minimum	0.41	95% KM (bootstrap t) UCL	0.64
Maximum	1.6	95% KM (BCA) UCL	N/A
Mean	0.915	95% KM (Percentile Bootstrap) UCL	1.333
Median	0.934	95% KM (Chebyshev) UCL	0.92
SD	0.342	97.5% KM (Chebyshev) UCL	1.089
k star	5.995	99% KM (Chebyshev) UCL	1.422
Theta star	0.153		
Nu star	215.8	**Potential UCLs to Use**	
AppChi2	182.8	**95% KM (t) UCL**	**0.685**
95% Gamma Approximate UCL	1.08	95% KM (Percentile Bootstrap) UCL	1.333
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Benzo(g,h,i)perylene

General Statistics

Number of Valid Data	22	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	18
		Percent Non-Detects	81.82%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.19	Minimum Detected	-1.661
Maximum Detected	0.9	Maximum Detected	-0.105
Mean of Detected	0.45	Mean of Detected	-0.959
SD of Detected	0.31	SD of Detected	0.641
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	1.2	Maximum Non-Detect	18.20%

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	22
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk Test Statistic	93.50%
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.298	Mean	-1.317
SD	0.172	SD	0.427
95% DL/2 (t) UCL	0.361	95% H-Stat (DL/2) UCL	0.351
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.185
		SD in Log Scale	33.30%
		Mean in Original Scale	0.326
		SD in Original Scale	0.145
		95% t UCL	0.379
		95% Percentile Bootstrap UCL	0.378
		95% BCA Bootstrap UCL	0.404
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.983	Data appear Normal at 5% Significance Level	
Theta Star	0.458		
nu star	7.863		
A-D Test Statistic	0.393	Nonparametric Statistics	
5% A-D Critical Value	0.659	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.659	Mean	0.329
5% K-S Critical Value	0.396	SD	0.149
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.059
		95% KM (t) UCL	0.43
Assuming Gamma Distribution		95% KM (z) UCL	0.426
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.447
Minimum	0.19	95% KM (bootstrap t) UCL	0.413
Maximum	0.9	95% KM (BCA) UCL	0.435
Mean	0.442	95% KM (Percentile Bootstrap) UCL	0.434
Median	0.441	95% KM (Chebyshev) UCL	0.586
SD	0.122	97.5% KM (Chebyshev) UCL	0.697
k star	13.71	99% KM (Chebyshev) UCL	0.916
Theta star	0.0323		
Nu star	603.1	**Potential UCLs to Use**	
AppChi2	547.1	**95% KM (t) UCL**	**0.43**
95% Gamma Approximate UCL	0.487	95% KM (Percentile Bootstrap) UCL	0.434
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
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ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Chrysene

General Statistics

Number of Valid Data	22	Number of Detected Data	7
Number of Distinct Detected Data	6	Number of Non-Detect Data	15
		Percent Non-Detects	68.18%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.19	Minimum Detected	-1.661
Maximum Detected	1.6	Maximum Detected	0.47
Mean of Detected	0.867	Mean of Detected	-0.352
SD of Detected	0.549	SD of Detected	0.75
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	0.9	Maximum Non-Detect	-0.105

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	2
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	90.91%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk Test Statistic	93.30%
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.446	Mean	-1.085
SD	0.421	SD	0.69
95% DL/2 (t) UCL	0.601	95% H-Stat (DL/2) UCL	0.596
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.264
		SD in Log Scale	0.807
		Mean in Original Scale	40.90%
		SD in Original Scale	0.438
		95% t UCL	0.569
		95% Percentile Bootstrap UCL	0.569
		95% BCA Bootstrap UCL	0.622
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.549	Data appear Normal at 5% Significance Level	
Theta Star	0.56		
nu star	21.68		
A-D Test Statistic	0.26	Nonparametric Statistics	
5% A-D Critical Value	0.713	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.713	Mean	0.414
5% K-S Critical Value	0.314	SD	0.426
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0991
		95% KM (t) UCL	0.585
Assuming Gamma Distribution		95% KM (z) UCL	0.577
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.595
Minimum	0.19	95% KM (bootstrap t) UCL	0.607
Maximum	1.6	95% KM (BCA) UCL	0.909
Mean	0.871	95% KM (Percentile Bootstrap) UCL	0.801
Median	0.872	95% KM (Chebyshev) UCL	0.846
SD	0.294	97.5% KM (Chebyshev) UCL	1.033
k star	6.646	99% KM (Chebyshev) UCL	1.4
Theta star	0.131		
Nu star	292.4	**Potential UCLs to Use**	
AppChi2	253.8	**95% KM (t) UCL**	**0.585**
95% Gamma Approximate UCL	1.004	95% KM (Percentile Bootstrap) UCL	0.801
95% Adjusted Gamma UCL	1.014		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
CHECKED/DATE: LMS 11-18-10

ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Fluoranthene

General Statistics			
Number of Valid Data	23	Number of Detected Data	11
Number of Distinct Detected Data	9	Number of Non-Detect Data	12
		Percent Non-Detects	52.17%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.32	Minimum Detected	-1.139
Maximum Detected	3.3	Maximum Detected	1.194
Mean of Detected	1.371	Mean of Detected	0.152
SD of Detected	0.852	SD of Detected	0.613
Minimum Non-Detect	0.4	Minimum Non-Detect	-0.916
Maximum Non-Detect	0.77	Maximum Non-Detect	-0.261
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	56.52%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk Test Statistic	0.93
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.774	Mean	-0.71
SD	0.82	SD	0.948
95% DL/2 (t) UCL	1.068	95% H-Stat (DL/2) UCL	1.266
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.507	Mean in Log Scale	-0.515
SD	1.135	SD in Log Scale	0.801
95% MLE (t) UCL	0.914	Mean in Original Scale	0.831
95% MLE (Tiku) UCL	1.055	SD in Original Scale	0.783
		95% t UCL	1.112
		95% Percentile Bootstrap UCL	1.116
		95% BCA Bootstrap UCL	1.171
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.397	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.572		
nu star	52.73		
A-D Test Statistic	0.497	Nonparametric Statistics	
5% A-D Critical Value	0.733	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.733	Mean	0.823
5% K-S Critical Value	0.257	SD	0.769
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.168
		95% KM (t) UCL	1.111
Assuming Gamma Distribution		95% KM (z) UCL	1.099
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.118
Minimum	0.32	95% KM (bootstrap t) UCL	120.20%
Maximum	3.3	95% KM (BCA) UCL	1.361
Mean	1.372	95% KM (Percentile Bootstrap) UCL	1.302
Median	1.393	95% KM (Chebyshev) UCL	1.556
SD	0.598	97.5% KM (Chebyshev) UCL	1.873
k star	5.219	99% KM (Chebyshev) UCL	2.496
Theta star	0.263		
Nu star	240.1	**Potential UCLs to Use**	
AppChi2	205.2	**95% KM (t) UCL**	**1.111**
95% Gamma Approximate UCL	1.605		
95% Adjusted Gamma UCL	1.623		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

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ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Phenanthrene

General Statistics

Number of Valid Data	15	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	11
		Percent Non-Detects	73.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.42	Minimum Detected	-0.868
Maximum Detected	0.66	Maximum Detected	-0.416
Mean of Detected	0.53	Mean of Detected	-0.649
SD of Detected	0.102	SD of Detected	0.191
Minimum Non-Detect	0.4	Minimum Non-Detect	-0.916
Maximum Non-Detect	0.45	Maximum Non-Detect	-0.799

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	3
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	80.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.988	Shapiro Wilk Test Statistic	0.999
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.297	Mean	-1.31
SD	0.153	SD	0.423
95% DL/2 (t) UCL	0.367	95% H-Stat (DL/2) UCL	0.37
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.578	Mean in Log Scale	-1.154
SD	0.0704	SD in Log Scale	36.00%
95% MLE (t) UCL	0.61	Mean in Original Scale	0.336
95% MLE (Tiku) UCL	0.648	SD in Original Scale	0.135
		95% t UCL	0.398
		95% Percentile Bootstrap UCL	0.393
		95% BCA Bootstrap UCL	0.403
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	9.351	Data appear Normal at 5% Significance Level	
Theta Star	0.0567		
nu star	74.8		
A-D Test Statistic	0.198	Nonparametric Statistics	
5% A-D Critical Value	0.656	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.656	Mean	0.449
5% K-S Critical Value	0.394	SD	6.66%
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0199
		95% KM (t) UCL	0.484
Assuming Gamma Distribution		95% KM (z) UCL	0.482
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.497
Minimum	0.42	95% KM (bootstrap t) UCL	0.48
Maximum	0.66	95% KM (BCA) UCL	0.66
Mean	0.509	95% KM (Percentile Bootstrap) UCL	0.565
Median	0.49	95% KM (Chebyshev) UCL	0.536
SD	0.0599	97.5% KM (Chebyshev) UCL	0.573
k star	65.47	99% KM (Chebyshev) UCL	0.647
Theta star	0.00778		
Nu star	1964	**Potential UCLs to Use**	
AppChi2	1862	**95% KM (t) UCL**	**0.484**
95% Gamma Approximate UCL	0.537	95% KM (Percentile Bootstrap) UCL	0.565
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

PREPARED/DATE: MDH 10-15-10
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ProUCL Output for CSX Surface Soils - VOCs and SVOCs

Pyrene

General Statistics			
Number of Valid Data	23	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	1200.00%
		Percent Non-Detects	52.17%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.27	Minimum Detected	-1.309
Maximum Detected	2.7	Maximum Detected	0.993
Mean of Detected	1.223	Mean of Detected	0.0282
SD of Detected	0.744	SD of Detected	0.642
Minimum Non-Detect	0.4	Minimum Non-Detect	-0.916
Maximum Non-Detect	0.77	Maximum Non-Detect	-0.261
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.87%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Test Statistic	0.956
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.703	Mean	-0.769
SD	0.715	SD	0.901
95% DL/2 (t) UCL	0.959	95% H-Stat (DL/2) UCL	1.103
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.439	Mean in Log Scale	-0.671
SD	1.021	SD in Log Scale	0.839
95% MLE (t) UCL	0.805	Mean in Original Scale	0.731
95% MLE (Tiku) UCL	0.967	SD in Original Scale	0.697
		95% t UCL	0.981
		95% Percentile Bootstrap UCL	0.979
		95% BCA Bootstrap UCL	1.029
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.278	Data appear Normal at 5% Significance Level	
Theta Star	0.537		
nu star	50.11		
A-D Test Statistic	0.281	Nonparametric Statistics	
5% A-D Critical Value	0.733	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.733	Mean	0.727
5% K-S Critical Value	0.257	SD	0.683
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.149
		95% KM (t) UCL	0.983
Assuming Gamma Distribution		95% KM (z) UCL	0.972
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.968
Minimum	0.27	95% KM (bootstrap t) UCL	1.025
Maximum	2.7	95% KM (BCA) UCL	1.2
Mean	1.226	95% KM (Percentile Bootstrap) UCL	1.132
Median	1.242	95% KM (Chebyshev) UCL	1.378
SD	0.524	97.5% KM (Chebyshev) UCL	1.66
k star	4.956	99% KM (Chebyshev) UCL	2.213
Theta star	0.247		
Nu star	228	**Potential UCLs to Use**	
AppChi2	194	**95% KM (t) UCL**	**0.983**
95% Gamma Approximate UCL	1.44	95% KM (Percentile Bootstrap) UCL	1.132
95% Adjusted Gamma UCL	1.457		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

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ProUCL Output of CSX Subsurface Soils - Metals

Arsenic

General Statistics			
Number of Valid Data	144	Number of Detected Data	91
Number of Distinct Detected Data	72	Number of Non-Detect Data	53
		Percent Non-Detects	36.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.061	Minimum Detected	-2.797
Maximum Detected	840	Maximum Detected	6.733
Mean of Detected	70.85	Mean of Detected	2.603
SD of Detected	152.4	SD of Detected	1.788
Minimum Non-Detect	0.054	Minimum Non-Detect	-2.919
Maximum Non-Detect	2.5	Maximum Non-Detect	0.916

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	63
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	81
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	43.75%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.355	Lilliefors Test Statistic	0.169
5% Lilliefors Critical Value	0.0929	5% Lilliefors Critical Value	0.0929
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	45.2	Mean	1.672
SD	125.5	SD	1.908
95% DL/2 (t) UCL	62.52	95% H-Stat (DL/2) UCL	54.49
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.24
		SD in Log Scale	2.426
		Mean in Original Scale	45.01
		SD in Original Scale	125.6
		95% t UCL	62.34
		95% Percentile Bootstrap UCL	64.02
		95% BCA Bootstrap UCL	67.79
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.392	Data do not follow a Discernable Distribution (0.05)	
Theta Star	180.9		
nu star	71.29		
A-D Test Statistic	7.559	Nonparametric Statistics	
5% A-D Critical Value	0.844	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.844	Mean	45.12
5% K-S Critical Value	0.1	SD	125.1
Data not Gamma Distributed at 5% Significance Level		SE of Mean	10.48
		95% KM (t) UCL	62.48
Assuming Gamma Distribution		95% KM (z) UCL	62.36
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	62.28
Minimum	1.00E-12	95% KM (bootstrap t) UCL	68.94
Maximum	840	95% KM (BCA) UCL	63.05
Mean	51.09	95% KM (Percentile Bootstrap) UCL	63.27
Median	6.8	95% KM (Chebyshev) UCL	90.82
SD	125	97.5% KM (Chebyshev) UCL	110.6
k star	0.0982	99% KM (Chebyshev) UCL	149.4
Theta star	520.5		
Nu star	28.27	**Potential UCLs to Use**	
AppChi2	17.14	**97.5% KM (Chebyshev) UCL**	**110.6**
95% Gamma Approximate UCL	84.28		
95% Adjusted Gamma UCL	84.71		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

ProUCL Output of CSX Subsurface Soils - Pesticides

Alpha, Beta, Delta-BHC

General Statistics			
Number of Valid Data	86	Number of Detected Data	22
Number of Distinct Detected Data	21	Number of Non-Detect Data	64
		Percent Non-Detects	74.42%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0032	Minimum Detected	-5.745
Maximum Detected	222	Maximum Detected	5.403
Mean of Detected	10.45	Mean of Detected	-2.873
SD of Detected	47.27	SD of Detected	248.50%
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	66
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	20
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	76.74%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.231	Shapiro Wilk Test Statistic	0.774
5% Shapiro Wilk Critical Value	0.911	5% Shapiro Wilk Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.674	Mean	-6.522
SD	23.94	SD	2.652
95% DL/2 (t) UCL	6.967	95% H-Stat (DL/2) UCL	0.167
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-9.334
		SD in Log Scale	5.004
		Mean in Original Scale	2.673
		SD in Original Scale	23.94
		95% t UCL	6.966
		95% Percentile Bootstrap UCL	7.833
		95% BCA Bootstrap UCL	13.07
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.158	Data do not follow a Discernable Distribution (0.05)	
Theta Star	66.23		
nu star	6.942		
A-D Test Statistic	5.204	Nonparametric Statistics	
5% A-D Critical Value	0.914	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.914	Mean	2.676
5% K-S Critical Value	0.207	SD	23.8
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.627
		95% KM (t) UCL	7.044
Assuming Gamma Distribution		95% KM (z) UCL	6.996
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.966
Minimum	0.0032	95% KM (bootstrap t) UCL	1374
Maximum	3266	95% KM (BCA) UCL	7.841
Mean	346	95% KM (Percentile Bootstrap) UCL	7.838
Median	12.37	95% KM (Chebyshev) UCL	14.13
SD	699.7	97.5% KM (Chebyshev) UCL	19.08
k star	0.215	99% KM (Chebyshev) UCL	28.81
Theta star	1612		
Nu star	36.91	Potential UCLs to Use	
AppChi2	24	97.5% KM (Chebyshev) UCL	19.08
95% Gamma Approximate UCL	532.1		
95% Adjusted Gamma UCL	536		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

alpha-BHC

General Statistics			
Number of Valid Data	66	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	53
		Percent Non-Detects	80.30%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0028	Minimum Detected	-5.878
Maximum Detected	26	Maximum Detected	3.258
Mean of Detected	2.571	Mean of Detected	-2.481
SD of Detected	7.156	SD of Detected	291.70%
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	56
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.85%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.418	Shapiro Wilk Test Statistic	0.923
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.508	Mean	-5.604
SD	3.243	SD	2.068
95% DL/2 (t) UCL	1.174	95% H-Stat (DL/2) UCL	0.0684
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-12.02
		SD in Log Scale	6.092
		Mean in Original Scale	0.506
		SD in Original Scale	3.243
		95% t UCL	1.173
		95% Percentile Bootstrap UCL	1.267
		95% BCA Bootstrap UCL	1.976
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.215	Data appear Lognormal at 5% Significance Level	
Theta Star	11.96		
nu star	5.589		
A-D Test Statistic	1.167	Nonparametric Statistics	
5% A-D Critical Value	0.863	Kaplan-Meier (KM) Method	
K-S Test Statistic	8.63E-01	Mean	0.509
5% K-S Critical Value	0.261	SD	3.218
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.412
		95% KM (t) UCL	1.197
Assuming Gamma Distribution		95% KM (z) UCL	1.187
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.174
Minimum	1.00E-12	95% KM (bootstrap t) UCL	6.101
Maximum	26	95% KM (BCA) UCL	1.235
Mean	2.388	95% KM (Percentile Bootstrap) UCL	1.298
Median	2.815	95% KM (Chebyshev) UCL	2.306
SD	3.292	97.5% KM (Chebyshev) UCL	3.083
k star	0.184	99% KM (Chebyshev) UCL	4.611
Theta star	12.95		
Nu star	24.33	Potential UCLs to Use	
AppChi2	14.1	97.5% KM (Chebyshev) UCL	3.083
95% Gamma Approximate UCL	4.12		
95% Adjusted Gamma UCL	4.172		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Chlordane

General Statistics			
Number of Valid Data	152	Number of Detected Data	26
Number of Distinct Detected Data	26	Number of Non-Detect Data	126
		Percent Non-Detects	82.89%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0031	Minimum Detected	-5.776
Maximum Detected	466	Maximum Detected	6.144
Mean of Detected	18.15	Mean of Detected	-2.871
SD of Detected	91.34	SD of Detected	272.60%
Minimum Non-Detect	5.00E-04	Minimum Non-Detect	-7.601
Maximum Non-Detect	0.05	Maximum Non-Detect	-2.996

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	140
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	12
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.11%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.205	Shapiro Wilk Test Statistic	0.843
5% Shapiro Wilk Critical Value	0.92	5% Shapiro Wilk Critical Value	0.92
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.109	Mean	-5.504
SD	37.79	SD	1.945
95% DL/2 (t) UCL	8.182	95% H-Stat (DL/2) UCL	0.045
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-11
		SD in Log Scale	5.282
		Mean in Original Scale	3.105
		SD in Original Scale	37.79
		95% t UCL	8.179
		95% Percentile Bootstrap UCL	9.232
		95% BCA Bootstrap UCL	15.35
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.145	Data do not follow a Discernable Distribution (0.05)	
Theta Star	125		
nu star	7.553		
A-D Test Statistic	5.533	Nonparametric Statistics	
5% A-D Critical Value	0.923	Kaplan-Meier (KM) Method	
K-S Test Statistic	9.23E-01	Mean	3.108
5% K-S Critical Value	0.192	SD	37.67
Data not Gamma Distributed at 5% Significance Level		SE of Mean	3.116
		95% KM (t) UCL	8.265
Assuming Gamma Distribution		95% KM (z) UCL	8.233
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.181
Minimum	1.00E-12	95% KM (bootstrap t) UCL	910.9
Maximum	44562	95% KM (BCA) UCL	9.265
Mean	2536	95% KM (Percentile Bootstrap) UCL	9.238
Median	68.46	95% KM (Chebyshev) UCL	16.69
SD	6294	97.5% KM (Chebyshev) UCL	22.57
k star	0.0815	99% KM (Chebyshev) UCL	34.11
Theta star	31112		
Nu star	24.78	Potential UCLs to Use	
AppChi2	14.45	97.5% KM (Chebyshev) UCL	22.57
95% Gamma Approximate UCL	4351		
95% Adjusted Gamma UCL	4374		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

DDD

General Statistics			
Number of Valid Data	91	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	87
		Percent Non-Detects	95.60%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	3.8	Maximum Detected	1.335
Mean of Detected	1.027	Mean of Detected	-2.567
SD of Detected	1.854	SD of Detected	329.70%
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	2	Maximum Non-Detect	0.693

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	90
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	1
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	98.90%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.684	Shapiro Wilk Test Statistic	0.979
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.062	Mean	-5.382
SD	0.411	SD	1.472
95% DL/2 (t) UCL	0.134	95% H-Stat (DL/2) UCL	0.0208
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-12.25
		SD in Log Scale	4.353
		Mean in Original Scale	0.0457
		SD in Original Scale	0.399
		95% t UCL	0.115
		95% Percentile Bootstrap UCL	0.129
		95% BCA Bootstrap UCL	0.177
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.234	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4.383		
nu star	1.874		
A-D Test Statistic	0.294	Nonparametric Statistics	
5% A-D Critical Value	0.713	Kaplan-Meier (KM) Method	
K-S Test Statistic	7.13E-01	Mean	0.0473
5% K-S Critical Value	0.42	SD	0.397
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.048
		95% KM (t) UCL	0.127
Assuming Gamma Distribution		95% KM (z) UCL	0.126
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.108
Minimum	1.00E-12	95% KM (bootstrap t) UCL	0.605
Maximum	25.94	95% KM (BCA) UCL	3.8
Mean	3.868	95% KM (Percentile Bootstrap) UCL	0.444
Median	1.073	95% KM (Chebyshev) UCL	0.257
SD	5.896	97.5% KM (Chebyshev) UCL	0.347
k star	0.0886	99% KM (Chebyshev) UCL	0.525
Theta star	43.65		
Nu star	16.13	Potential UCLs to Use	
AppChi2	8.051	95% KM (t) UCL	0.127
95% Gamma Approximate UCL	7.747		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

DDE

General Statistics			
Number of Valid Data	153	Number of Detected Data	25
Number of Distinct Detected Data	25	Number of Non-Detect Data	128
		Percent Non-Detects	83.66%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0045	Minimum Detected	-5.404
Maximum Detected	78	Maximum Detected	4.357
Mean of Detected	3.303	Mean of Detected	-2.694
SD of Detected	15.57	SD of Detected	214.40%
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.05	Maximum Non-Detect	-2.996
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	143
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.46%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.219	Shapiro Wilk Test Statistic	0.874
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.543	Mean	-5.56
SD	6.305	SD	1.83
95% DL/2 (t) UCL	1.387	95% H-Stat (DL/2) UCL	0.0325
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-9.831
		SD in Log Scale	4.504
		Mean in Original Scale	0.54
		SD in Original Scale	6.306
		95% t UCL	1.384
		95% Percentile Bootstrap UCL	1.558
		95% BCA Bootstrap UCL	2.135
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.194	Data do not follow a Discernable Distribution (0.05)	
Theta Star	16.98		
nu star	9.723		
A-D Test Statistic	4.873	Nonparametric Statistics	
5% A-D Critical Value	0.9	Kaplan-Meier (KM) Method	
K-S Test Statistic	9.00E-01	Mean	0.544
5% K-S Critical Value	0.194	SD	6.285
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.519
		95% KM (t) UCL	1.402
Assuming Gamma Distribution		95% KM (z) UCL	1.397
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.386
Minimum	0.0045	95% KM (bootstrap t) UCL	43.41
Maximum	841.1	95% KM (BCA) UCL	1.572
Mean	89.01	95% KM (Percentile Bootstrap) UCL	1.557
Median	11.04	95% KM (Chebyshev) UCL	2.804
SD	159.3	97.5% KM (Chebyshev) UCL	3.782
k star	0.292	99% KM (Chebyshev) UCL	5.703
Theta star	305.3		
Nu star	89.23	Potential UCLs to Use	
AppChi2	68.45	97.5% KM (Chebyshev) UCL	3.782
95% Gamma Approximate UCL	116		
95% Adjusted Gamma UCL	116.3		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

DDT

General Statistics			
Number of Valid Data	153	Number of Detected Data	43
Number of Distinct Detected Data	43	Number of Non-Detect Data	110
		Percent Non-Detects	71.90%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0022	Minimum Detected	-6.119
Maximum Detected	774	Maximum Detected	6.652
Mean of Detected	21.19	Mean of Detected	-1.623
SD of Detected	118.7	SD of Detected	246.90%
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.35	Maximum Non-Detect	-1.05
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	138
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	15
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.20%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.19	Shapiro Wilk Test Statistic	0.937
5% Shapiro Wilk Critical Value	0.943	5% Shapiro Wilk Critical Value	0.943
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.959	Mean	-4.833
SD	63.13	SD	2.584
95% DL/2 (t) UCL	14.41	95% H-Stat (DL/2) UCL	0.522
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-7.423
		SD in Log Scale	4.648
		Mean in Original Scale	5.955
		SD in Original Scale	63.13
		95% t UCL	14.4
		95% Percentile Bootstrap UCL	15.46
		95% BCA Bootstrap UCL	25.5
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.167	Data do not follow a Discernable Distribution (0.05)	
Theta Star	127.2		
nu star	14.33		
A-D Test Statistic	7.866	Nonparametric Statistics	
5% A-D Critical Value	0.928	Kaplan-Meier (KM) Method	
K-S Test Statistic	9.28E-01	Mean	5.956
5% K-S Critical Value	0.151	SD	62.93
Data not Gamma Distributed at 5% Significance Level		SE of Mean	5.148
		95% KM (t) UCL	14.48
Assuming Gamma Distribution		95% KM (z) UCL	14.42
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	14.4
Minimum	1.00E-12	95% KM (bootstrap t) UCL	558.2
Maximum	774	95% KM (BCA) UCL	16.12
Mean	57.78	95% KM (Percentile Bootstrap) UCL	16.08
Median	0.057	95% KM (Chebyshev) UCL	28.39
SD	138	97.5% KM (Chebyshev) UCL	38.1
k star	0.0639	99% KM (Chebyshev) UCL	57.17
Theta star	904.4		
Nu star	19.55	Potential UCLs to Use	
AppChi2	10.52	97.5% KM (Chebyshev) UCL	38.1
95% Gamma Approximate UCL	107.4		
95% Adjusted Gamma UCL	108		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

gamma-BHC (Lindane)

General Statistics			
Number of Valid Data	153	Number of Detected Data	28
Number of Distinct Detected Data	25	Number of Non-Detect Data	125
		Percent Non-Detects	81.70%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.005	Minimum Detected	-5.298
Maximum Detected	33	Maximum Detected	3.497
Mean of Detected	1.973	Mean of Detected	-2.776
SD of Detected	6.96	SD of Detected	232.60%
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.05	Maximum Non-Detect	-2.996
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	139
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	14
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.85%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.32	Shapiro Wilk Test Statistic	0.863
5% Shapiro Wilk Critical Value	0.924	5% Shapiro Wilk Critical Value	0.924
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.362	Mean	-6.322
SD	3.031	SD	2.203
95% DL/2 (t) UCL	0.768	95% H-Stat (DL/2) UCL	0.0384
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-10.39
		SD in Log Scale	4.926
		Mean in Original Scale	0.361
		SD in Original Scale	3.031
		95% t UCL	0.767
		95% Percentile Bootstrap UCL	0.808
		95% BCA Bootstrap UCL	1.103
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.212	Data do not follow a Discernable Distribution (0.05)	
Theta Star	9.293		
nu star	11.89		
A-D Test Statistic	4.268	Nonparametric Statistics	
5% A-D Critical Value	0.892	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.892	Mean	0.365
5% K-S Critical Value	0.183	SD	3.021
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.249
		95% KM (t) UCL	0.777
Assuming Gamma Distribution		95% KM (z) UCL	0.774
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.769
Minimum	1.00E-12	95% KM (bootstrap t) UCL	7.526
Maximum	318.5	95% KM (BCA) UCL	0.808
Mean	42.77	95% KM (Percentile Bootstrap) UCL	0.817
Median	5.622	95% KM (Chebyshev) UCL	1.449
SD	72.55	97.5% KM (Chebyshev) UCL	1.918
k star	0.102	99% KM (Chebyshev) UCL	2.84
Theta star	419.1		
Nu star	31.22	Potential UCLs to Use	
AppChi2	19.46	97.5% KM (Chebyshev) UCL	1.918
95% Gamma Approximate UCL	68.63		
95% Adjusted Gamma UCL	68.94		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Heptachlor

General Statistics			
Number of Valid Data	153	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	135
		Percent Non-Detects	88.24%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	1.3	Maximum Detected	0.262
Mean of Detected	0.0884	Mean of Detected	-4.321
SD of Detected	0.303	SD of Detected	1.522
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.06	Maximum Non-Detect	-281.30%
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	151
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	98.69%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.298	Shapiro Wilk Test Statistic	0.868
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0124	Mean	-6.547
SD	0.105	SD	1.508
95% DL/2 (t) UCL	0.0265	95% H-Stat (DL/2) UCL	0.00624
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-9.828
		SD in Log Scale	3.053
		Mean in Original Scale	0.0106
		SD in Original Scale	0.105
		95% t UCL	0.0247
		95% Percentile Bootstrap UCL	0.0275
		95% BCA Bootstrap UCL	0.0437
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.332	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.266		
nu star	11.96		
A-D Test Statistic	2.835	Nonparametric Statistics	
5% A-D Critical Value	0.831	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.831	Mean	0.0123
5% K-S Critical Value	0.219	SD	0.105
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00871
		95% KM (t) UCL	0.0267
Assuming Gamma Distribution		95% KM (z) UCL	0.0267
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0258
Minimum	0.0021	95% KM (bootstrap t) UCL	0.189
Maximum	2.92	95% KM (BCA) UCL	0.0377
Mean	0.587	95% KM (Percentile Bootstrap) UCL	0.0297
Median	0.327	95% KM (Chebyshev) UCL	0.0503
SD	0.672	97.5% KM (Chebyshev) UCL	0.0667
k star	0.637	99% KM (Chebyshev) UCL	0.099
Theta star	0.922		
Nu star	194.9	Potential UCLs to Use	
AppChi2	1.64E+02	95% KM (Chebyshev) UCL	0.0503
95% Gamma Approximate UCL	0.7		
95% Adjusted Gamma UCL	0.701		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Toxaphene

General Statistics			
Number of Valid Data	152	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	140
		Percent Non-Detects	92.11%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.077	Minimum Detected	-2.564
Maximum Detected	700	Maximum Detected	6.551
Mean of Detected	62.5	Mean of Detected	0.84
SD of Detected	200.8	SD of Detected	2.518
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298
Maximum Non-Detect	0.5	Maximum Non-Detect	-69.30%
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	143
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	94.08%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.349	Shapiro Wilk Test Statistic	0.934
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.976	Mean	-3.636
SD	56.78	SD	2.136
95% DL/2 (t) UCL	12.6	95% H-Stat (DL/2) UCL	0.472
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-12.41
		SD in Log Scale	6.414
		Mean in Original Scale	4.936
		SD in Original Scale	56.79
		95% t UCL	12.56
		95% Percentile Bootstrap UCL	14.13
		95% BCA Bootstrap UCL	18.96
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.221	Data appear Lognormal at 5% Significance Level	
Theta Star	283.4		
nu star	5.293		
A-D Test Statistic	1.588	Nonparametric Statistics	
5% A-D Critical Value	0.857	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.857	Mean	5.005
5% K-S Critical Value	0.27	SD	56.59
Data not Gamma Distributed at 5% Significance Level		SE of Mean	4.794
		95% KM (t) UCL	12.94
Assuming Gamma Distribution		95% KM (z) UCL	12.89
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	12.59
Minimum	1.00E-12	95% KM (bootstrap t) UCL	225.9
Maximum	364766	95% KM (BCA) UCL	14.46
Mean	52235	95% KM (Percentile Bootstrap) UCL	14.16
Median	15998	95% KM (Chebyshev) UCL	25.9
SD	81530	97.5% KM (Chebyshev) UCL	34.95
k star	0.155	99% KM (Chebyshev) UCL	52.71
Theta star	335919		
Nu star	47.27	Potential UCLs to Use	
AppChi2	32.49	97.5% KM (Chebyshev) UCL	34.95
95% Gamma Approximate UCL	75993		
95% Adjusted Gamma UCL	76267		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

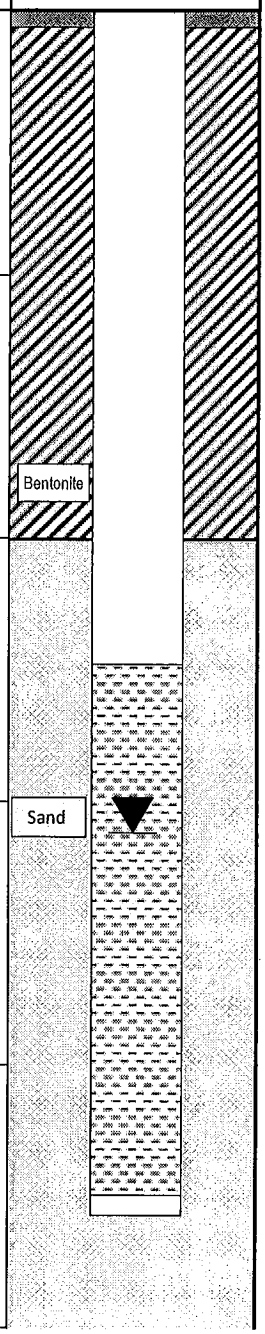
APPENDIX D

WELL CONSTRUCTION DIAGRAMS AND BORING LOGS

AMEC	BORING LOG	TW-1 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/14/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/14/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	3'	NA	0-2	ML/ CL	0-1 ft bgs. SILT (ML), dark brown. 1 to 3 ft bgs Lean CLAY (CL), reddish-brown fine grained
6 7 8 9 10	5-10'	3'	NA	8-10	ML	5-8 ft bgs. SILT (ML), brown, micaeous, fine grained.
11 12 13 14 15	10-15'	4'	NA	10-12	ML	10-14 ft bgs. SILT (ML), brown to grayish-brown, micaceous, weak relic foliation. Groundwater at 13 ft bgs. Static water level 16 ft btoc
16 17 18 19 20	15-20'	4.5'	NA		ML	15-19.5 ft bgs. SILT (ML), grayish-brown, micaceous, slightly sandy, very fine grained.
21 22 23 24 25	20-25'	4'	NA		ML	20-24 ft bgs. SILT (ML), grayish-brown, micaceous, slightly sandy very fine grained, weak relic foliation, saturated at 22 ft bgs.



AMEC	BORING LOG	TW-1 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/14/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/14/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
26 – 27	25-27'	2'	NA		ML	25-27 ft bgs. SILT (ML), grayish-brown, micaceous, slightly sandy very fine grained, weak relic foliation, refusal at 27 ft bgs. Boring caves to 23 feet.
						Boring Terminated at 27.0' bgs Well Set to 23.0' bgs End Cap 22.5' - 22.7' #10 slot 2" Sch 40 PVC screen: 12.5-22.5' bgs Clean Silica Sand 10-27' bgs Bentonite Seal 0-10' bgs Portland Grout at grade Stick up with no protective cover.

prepared by: JAM - 5/15/12
checked by: RNQ 8/4/12

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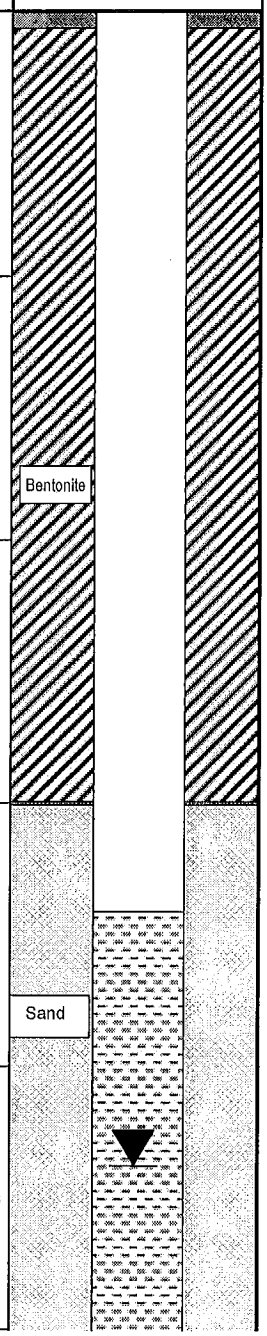
AMEC	BORING LOG	TW-2 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/14/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/14/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	3'	NA	0-2	CL	0-3 ft bgs. CLAY (CL), reddish-brown micaceous, fine grained
6 7 8 9 10	5-10'	3'	NA		CL	5 - 8 ft bgs. CLAY (CL), lean, reddish-brown micaceous, fine grained
11 12 13 14 15	10-15	3'	NA	10-12	ML	10-13 ft bgs. SILT (ML), brown, very micaceous, slightly sandy, weak relic foliation
16 17 18 19 20	15-20	3.5'	NA	16-18	ML	15-18.5 ft bgs. SILT (ML), brown very micaceous, slightly sandy, weak relic foliation.
21 22 23 24 25	20-25	4.5'	NA		SM	20-24.5 ft bgs. Sandy SILT (SM) brown to yellowish-brown, micaceous, relic foliation, saturated at 20 ft. Static water level 22.44 ft btoc.



AMEC	BORING LOG	TW-2 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/14/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/14/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS	
26 27 28 29 30	25-30	4'	NA		SM	25-29 ft bgs. Sandy SILT (SM) brown to yellowish-brown, micaceous, sandy, relic foliation, saturated at 20 ft. Refusal 29.5 ft bgs. Boring caved to 27.5 ft bgs.	
						Boring Terminated at 29.5' bgs Well Set to 27.2' bgs End Cap 27.0' - 27.2' #10 slot 2" Sch 40 PVC screen: 17-27' bgs Clean Silica Sand 15-29.5' bgs Bentonite Seal 0-15' bgs Portland Grout at grade Stick up with no protective cover.	End Of Boring

prepared by: JAM - 5/15/12
checked by: RNQ 8/4/12

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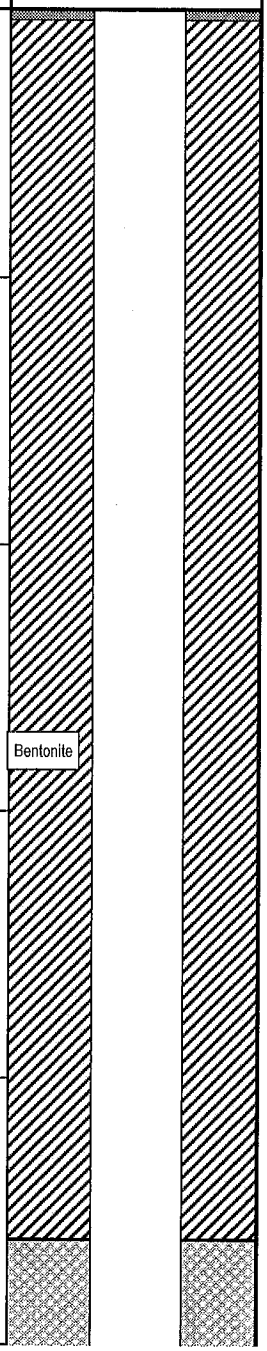
AMEC	BORING LOG	TW-3 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/14/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/14/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

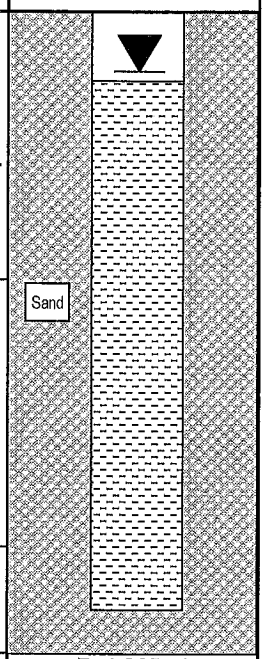
DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	3'	NA	0-2	Fill/ CL	0-0.5 ft bgs. Rock, gravel, bricks (fill) at surface. 0.5-3 ft bgs CLAY (CL), lean, reddish-brown, micaceous.
6 7 8 9 10	5-10'	4.5'	NA		CL	5-9.5 ft bgs. CLAY (CL) lean, reddish-brown, micaceous, fine grained.
11 12 13 14 15	10-15'	4'	NA	10-12	CL/ ML	10-14 ft bgs. CLAY (CL) lean reddish-brown, micaceous grading to SILT (ML), brown, micaceous, slightly sandy
16 17 18 19 20	15-20'	4'	NA	18-20	ML	15-19 ft bgs.SILT (ML), brown, micaceous, slightly sandy
21 22 23 24 25	20-25'	5'	NA		ML	20-25 ft bgs.SILT (ML), brown, micaceous, thin layer of quartz gravel at 22 ft bgs, weak relic foliation, banded structure, groundwater at 22 ft bgs.



AMEC	BORING LOG	TW-3 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/14/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/14/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
26 27 28 29 30	25-30'	4.5'	NA		ML	25-29.5 ft bgs.SILT (ML), brown, micaceous, slightly sandy, weak relic foliation. Static water level 26.85 ft btoc.
31 32 33 34 35	30-35'	2.5'	NA		ML	30-32.5 ft bgs.SILT (ML), brown, micaceous, slightly sandy, weak relic foliation. Rod refusal at 32.5 ft bgs.
36 37	35-40'	0	NA			Drilled boring 32.5 to 37.5 ft bgs using 2-inch diameter solid-stem augers. No soil samples collected
						Boring Terminated at 37.5' bgs Well Set to 36.6' bgs End Cap 36.4' - 36.6' #10 slot 2" Sch 40 PVC screen: 26.4-36.4' bgs Clean Silica Sand 23-37.5' bgs Bentonite Seal 0-23' bgs Portland Grout at grade Stick up with no protective cover.



End Of Boring

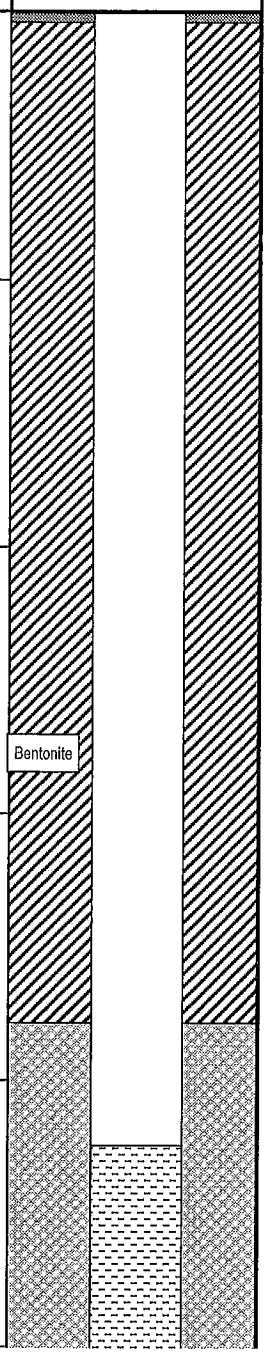
prepared by: JAM - 5/15/12
checked by: RNQ 8/3/12

AMEC Environment & Infrastructure, Inc.

AMEC	BORING LOG	TW-4 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/14/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/14/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

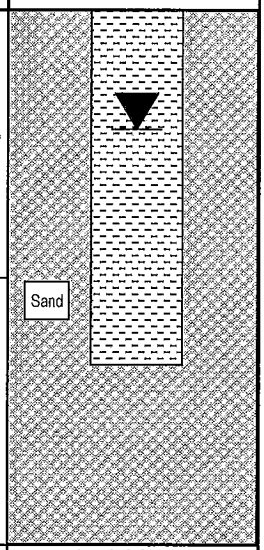
DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	2'	NA	0-2	Fill	0-0.2 ft bgs. Roots and bits of organic material. 0.2-2 ft bgs. Lean dark brown CLAY mixed with gravel, black cinders and sand (fill)
6 7 8 9 10	5-10'	0.6'	NA		Fill	Chucks of concrete in core barrel, very little recovery
11 12 13 14 15	10-15'	3'	NA	10-12	CL	10-13 ft bgs. CLAY (CL) fat reddish-brown and gray, micaceous
16 17 18 19 20	15-20'	4.5'	NA		CL/ ML	15-19.5 ft bgs.CLAY (CL), lean, reddish-brown, micaceous, grading to SILT (ML), brown, micaceous, slightly sandy.
21 22 23 24 25	20-25'	4'	NA	20-22	ML	20-24 ft bgs.SILT (ML), brown, micaceous, slightly sandy, groundwater at 24 ft bgs.



AMEC	BORING LOG	TW-4 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/14/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/14/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
26 27 28 29 30	25-30'	4'	NA		ML	25-29 ft bgs.SILT (ML), brown, micaceous, slightly sandy, weak relic foliation. Static water level 27.70 ft btoc
31 32 33 34 35	30-35'	5'	NA		ML	30-35 ft bgs.SILT (ML), brown, micaceous, relic foliation, sandy in zones with trace small quartz fragments. Very hard material. Borehole collapses to 32.0 ft bgs.
						Boring Terminated at 35' bgs Well Set to 32.3' bgs End Cap 31.8' - 32' #10 slot 2" Sch 40 PVC screen: 21.8-31.8' bgs Clean Silica Sand 19-35' bgs Bentonite Seal 0-19' bgs Portland Grout at grade Stick up with no protective cover.



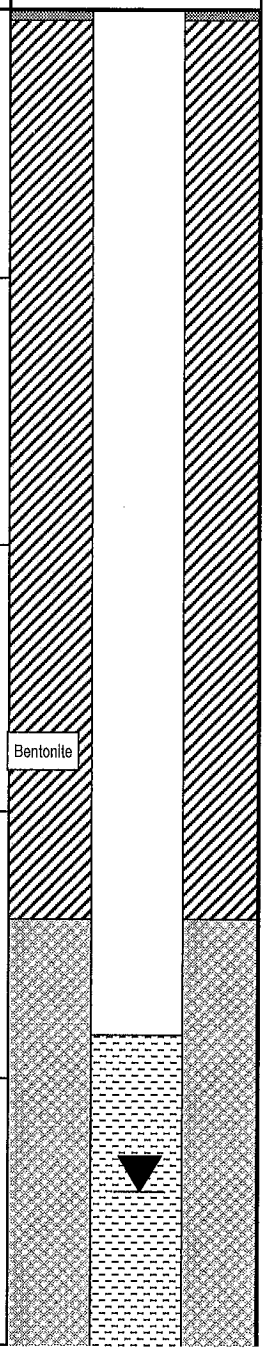
End Of Boring

prepared by: JAM - 5/15/12
checked by: RNQ 8/3/12

AMEC Environment & Infrastructure, Inc.

AMEC	BORING LOG	TW-5 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/14/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/14/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	2'	NA	0-2	Fill	0-2 ft bgs. Brick, concrete, styrofoam, black cinders, and sand with Lean reddish-brown micaceous CLAY (fill)
6 7 8 9 10	5-10'	3'	NA		CL	5-8 ft bgs. CLAY (CL) fat reddish-brown, micaceous, fine grained
11 12 13 14 15	10-15'	4'	NA	10-12	CL/ ML	10-14 ft bgs. CLAY (CL) fat reddish-brown, micaceous. Grading to SILT (ML), brown micaceous, slightly sandy, weak relic foliation.
16 17 18 19 20	15-20'	4'	NA	18-20	ML	15-19 ft bgs.SILT (ML), brown, micaceous, with a few sandy layers, weak relic foliation. Saturated at 18 ft bgs.
21 22 23 24 25	20-25'	1.5'	NA		SM	20-21.5 ft bgs.Silty SAND (SM), brown, very fine grained micaceous. Rod refusal at 21.5 ft bgs. Static water level 22.57 ft btoc.



AMEC	BORING LOG	TW-5 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/14/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/14/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS	
26 27 28 29 30	25-30'	0	NA			Drill with 2-inch diameter solid-stem augers from 21.5 to 30.0 ft bgs. Auger refusal on rock at 30 ft bgs.	Sand
						Boring Terminated at 30' bgs Well Set to 30.0' bgs End Cap 29.8' - 30' #10 slot 2" Sch 40 PVC screen: 19.8-29.8' bgs Clean Silica Sand 17-30' bgs Bentonite Seal 0-17' bgs Portland Grout at grade Stick up with no protective cover.	End Of Boring

prepared by: JAM - 5/15/12
checked by: RNQ 8/3/12

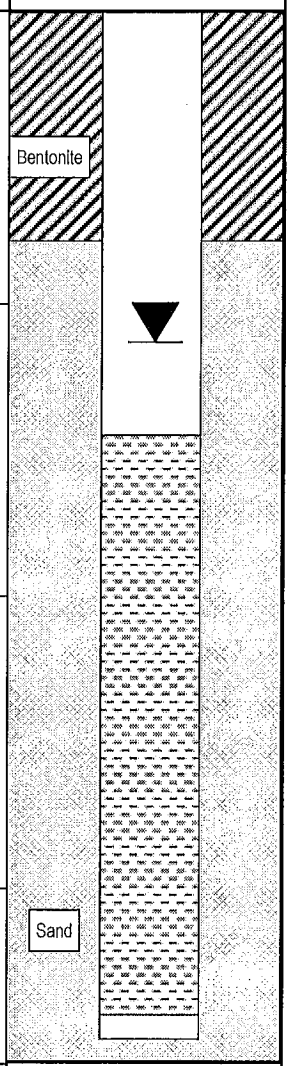
AMEC Environment & Infrastructure, Inc.

AMEC	BORING LOG	TW-6 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	3'	NA	0-2	Fill	0-0.2 ft bgs. Roots and organic matter. 0.2-1.5 ft bgs. Gravel and brown silt (Fill). 1.5-3 ft bgs Sand and concrete (Fill).
6 7 8 9 10	5-10'	2'	NA		Fill	5-7 ft bgs. Rod refusal on rock fill at 6 ft bgs. Offset and probe deeper, rock, gravel, sand and wood (Fill).
11 12 13 14 15	10-15'	3'	NA	10-12	Fill	10-13 ft bgs. Rod refusal at 11 ft bgs on rock fill. Offset and probe deeper, very hard material to 13 ft bgs, then lean dark brown CLAY mixed with rock fill. (Fill)
16 17 18 19 20	15-20'	3'	NA	18-20	CL/ SM	15-15.5 ft bgs. Hard rock fill. 15.5 to 19.5 ft bgs CLAY (CL), lean, brown, micaceous, then Silty SAND (SM), reddish-brown and yellowish-brown with rock fragments.

AMEC	BORING LOG	TW-6 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
21 22 23 24 25	20-25'	3.5'	NA		SM/ ML	20-24.5 ft bgs. CLAY (CL), fat, reddish-brown grading to pale brown and light gray, micaceous grading to Silty SAND (SM), pale brown, very fine grained, micaeous, poorly graded. Static water level 25.71 ft bgs.
26 27 28 29 30	25-30'	3.5'	NA		ML/ SM	25-25.5 ft bgs.Silty SAND (SM) grading to SILT (ML), pale brown, micaceous to 26.3 ft bgs, grading to SILT with quartz layers, pale brown, white and brown, micaceous, weak relic foliation.
31 32 33 34 35	30-35'	2'	NA		ML	30-32 ft bgs.SILT (ML), brown, micaceous, slightly sandy, weak relic foliation (banded).
36 37 38	35-38.5'	3.5'	NA		ML	35-38.5 ft bgs. Sandy SILT (ML), brown, micaceous, fine grained. Rod refusal at 22 ft bgs. Drill with 2-inch diameter solid-stem augers to 38.5 ft bgs.
39						Boring Terminated at 38.5' bgs Well Set to 37.9' bgs End Cap 37.7' - 37.9' #10 slot 2" Sch 40 PVC screen: 27.7-37.7' bgs Clean Silica Sand 24-38.5' bgs Bentonite Seal 0-24' bgs Portland Grout at grade Stick up with no protective cover.

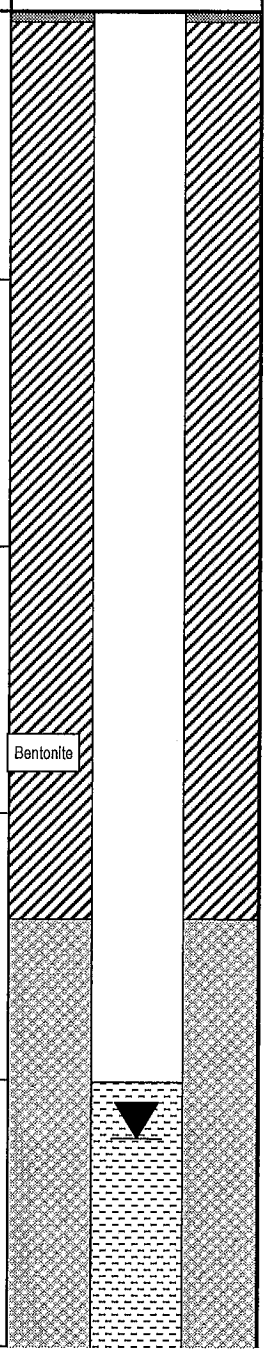


End Of Boring

prepared by: JAM - 5/17/12
checked by: RNQ 8/4/12

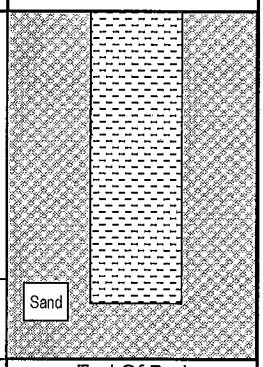
AMEC	BORING LOG	TW-7 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	3'	NA	0-2	Fill	0-3 ft bgs. Sandy SILT, brown with rock fragments and brick (Fill)
6 7 8 9 10	5-10'	0	NA		Fill	No recovery due to rock fragments blocking sampling tube.
11 12 13 14 15	10-15'	4'	NA	10-12	Fill	10-14 ft bgs. Rock mixed with lean orangish-brown micaceous clay and wood. 12-13 ft bgs rock.
16 17 18 19 20	15-20'	1'	NA		Fill	Wood, rock and brick mixed with purple to dark reddish-brown silt, sand and gravel.
21 22 23 24 25	20-25'	5'	NA		CL	20-25 ft bgs.CLAY (CL), fat, pale brown and yellowish-brown, micaceous, fine sandy zones, saturated. Static water level 21.48 ft btoc.



AMEC	BORING LOG	TW-7 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/15/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/15/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

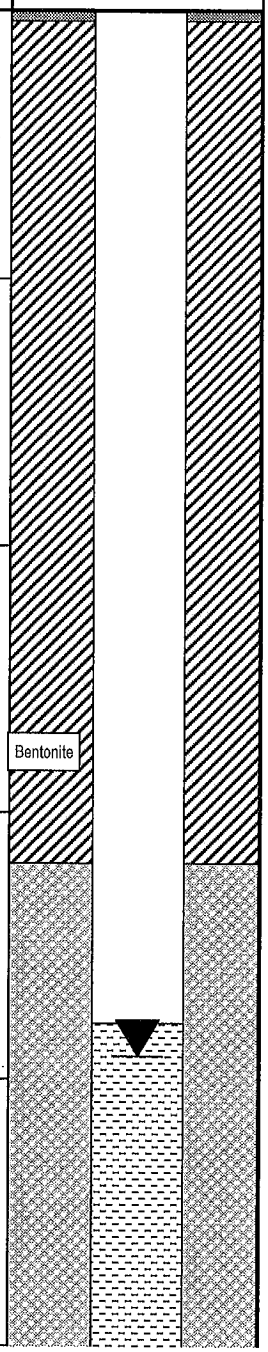
DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS	
26 27 28 29 30	25-30	5	NA		ML/ SM	25-30 ft bgs.SILT (ML) and Silty fine SAND (SM), pale brown to yellowish-brown, micaceous, relic foliation.	
31	30-32	1.3	NA		ML/ SM	30-31.3 ft bgs.SILT (ML) and Silty fine SAND (SM), pale brown to yellowish-brown, micaceous, relic foliation. Rod refusal at 31.3 ft bgs.	
32						Boring Terminated at 31.3' bgs Well Set to 31.0' bgs End Cap 30.8' - 31.0' #10 slot 2" Sch 40 PVC screen: 20.8-30.8' bgs Clean Silica Sand 17-31.3' bgs Bentonite Seal 0-17' bgs Portland Grout at grade Stick up with no protective cover.	End Of Boring

AMEC Environment & Infrastructure, Inc.

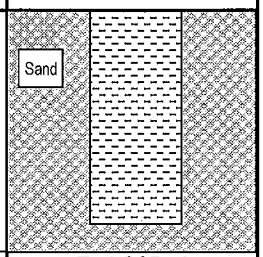
prepared by: JAM - 5/16/12
checked by: RNQ 8/3/12

AMEC	BORING LOG	TW-8 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	3'	NA	0-2	Fill	0-0.8 ft bgs. Rock. Offset and advance boring. 0.8 to 3 ft bgs. Sandy SILT with red brick and rock fragments (Fill)
6 7 8 9 10	5-10'	0	NA		Fill	No recovery due to rock fragments blocking sampling tube.
11 12 13 14 15	10-15'	4'	NA	10-12	Fill/ SM	10-14 ft bgs. Rock fragments mixed with brown Sandy SILT, fine to medium grained, micaceous.
16 17 18 19 20	15-20'	2'	NA		Fill	14-15.5 ft bgs. Same as above. 15.5 to 16 ft bgs wood fragments. 16-19 ft bgs white SILT then wood fragments then brown Sandy SILT, saturated. Static water level 19.48 ft btoc.
21 22 23 24 25	20-25'	3.5'	NA		ML	20-23.5 ft bgs.SILT (ML), brown with sandy layers, micaceous, grading to Sandy SILT, brown, micaceous, very fine grained with weak relic foliation.



AMEC	BORING LOG	TW-8 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

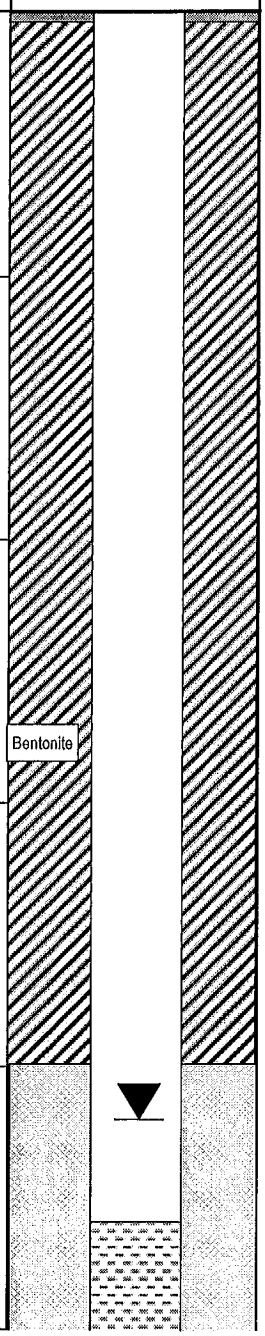
DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS	
26 27 28 29	25-30'	4'	NA		SM	25-29 ft bgs.Sandy SILT (SM), brown, micaceous, very fine grained with weak relic foliation.	
30 31 32						Boring Terminated at 29.5' bgs Well Set to 29.2' bgs End Cap 29.0' - 29.2' #10 slot 2" Sch 40 PVC screen: 19.0-29.0' bgs Clean Silica Sand 16-29.5' bgs Bentonite Seal 0-16' bgs Portland Grout at grade Stick up with no protective cover.	End Of Boring

prepared by: JAM - 5/16/12
checked by: RNQ 8/3/12

AMEC Environment & Infrastructure, Inc.

AMEC	BORING LOG	TW-9 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

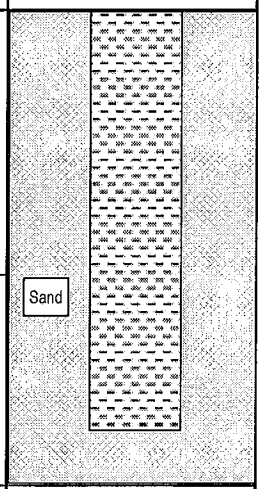
DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	2'	NA	0-2	Fill	0-2 ft bgs. CLAY lean, brown with some rock fragments and roots (Fill)
6 7 8 9 10	5-10'	3'	NA		Fill	SILT, SAND and brick, brown to reddish-brown and dark brown, rock at 5-6 ft bgs
11 12 13 14 15	10-15'	2'	NA	10-12	Fill	SILT, SAND and brick, brown to reddish-brown and dark brown.
16 17 18 19 20	15-20'	4'	NA	15-17	ML	15-19 ft bgs. SILT (ML), brown, slightly sandy, micaceous, wet at 18 ft bgs
21 22 23 24 25	20-25	4.5'	NA		ML	20-24.5 ft bgs. SILT (ML), brown, micaceous, grading to Sandy SILT (SM), brown micaceous, weak relic foliation. Static water level 21.49 ft btoc.



AMEC	BORING LOG	TW-9 (BORING ID.)

PROJECT: BFEL-Atlanta
CLIENT: BFEL Indemnitor, Inc — PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia — DATE START: 5/15/12
TOP OF RISER ELEVATION: — DATE FINISH: 5/15/12
GROUND ELEVATION: ft — DATUM: Georgia State Plane (west zone) — DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig — FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel
CORING METHOD: DPT

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
26, 27, 28, 29, 30	25-30	2.3'	NA		ML	25-27.3 ft bgs.SILT (ML), brown, micaceous, slightly sandy, weak relic foliation. Rod Refusal at 27.3 ft bgs.
31, 32, 33, 34	30-35	0	NA		ML	Drill 27.3 to 34.5 ft bgs with 2-inch diameter solid-stem augers.
35						Boring Terminated at 34.5' bgs Well Set to 33.2' bgs End Cap 33' - 33.2' #10 slot 2" Sch 40 PVC screen: 23-33' bgs Clean Silica Sand 20-34.5' bgs Bentonite Seal 0-20' bgs Portland Grout at grade Stick up with no protective cover.



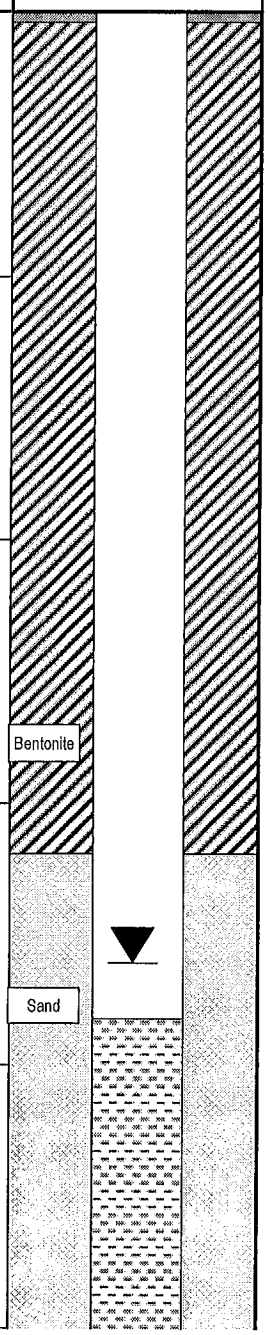
End Of Boring

prepared by: JAM - 5/16/12
checked by: RNQ 8/3/12

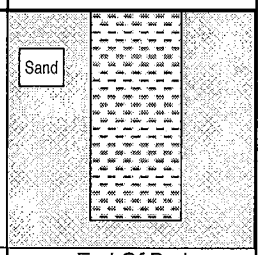
AMEC Environment & Infrastructure, Inc.

AMEC	BORING LOG	TW-10 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	2'	NA	0-2	Fill	0-2 ft bgs. Reddish-brown lean clay with brick and concrete fragments and black cinder material (Fill)
6 7 8 9 10	5-10'	0	NA		Fill	No recovery due to brick fragments blocking sampling tube.
11 12 13 14 15	10-15'	4'	NA	10-12	SM	10-14 ft bgs. Sandy SILT (SM), brown, very fine grained, micaceous.
16 17 18 19 20	15-20'	3'	NA	14-16	SM	10-14 ft bgs. Sandy SILT (SM), brown, very fine grained, micaceous. Groundwater 19 ft bgs. Static water level 18.35 ft btoc.
21 22 23 24 25	20-25'	4'	NA		SM	20-24 ft bgs. Sandy SILT (SM), brown and yellowish-brown, micaceous, very fine grained with weak relic foliation.



AMEC	BORING LOG	TW-10 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/15/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/15/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS	
26 27 28 29	25-30	1'	NA		SM	25-26 ft bgs. Sandy SILT (SM), brown and yellowish-brown, micaceous, very fine grained, poorly graded with relic foliation. Rod refusal at 26 ft bgs. 26-29.4 ft bgs. Drill with 2-inch diameter solid-stem augers to refusal on rock at 29.4 ft bgs.	
30 31 32						Boring Terminated at 29.4' bgs Well Set to 29.4' bgs End Cap 29.2' - 29.4' #10 slot 2" Sch 40 PVC screen: 19.2-29.2' bgs Clean Silica Sand 16-29.4' bgs Bentonite Seal 0-16' bgs Portland Grout at grade Stick up with no protective cover.	End Of Boring

prepared by: JAM - 5/16/12
checked by: RNQ 8/3/12

AMEC Environment & Infrastructure, Inc.

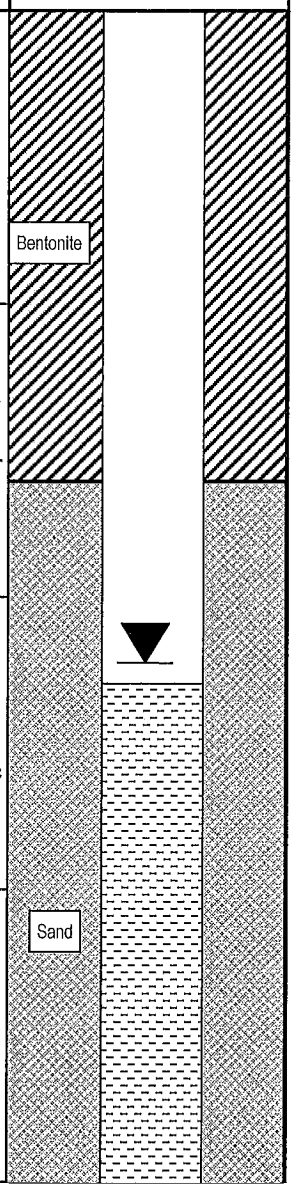
AMEC	BORING LOG	TW-11 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/16/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/16/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	3'	NA	0-2	CL	0-3 ft bgs. CLAY (CL) lean reddish-brown micaceous with some gravel.
6 7 8 9 10	5-10'	4'	NA		ML	10-14 ft bgs. SILT (ML), brown, micaceous.
11 12 13 14 15	10-15'	3'	NA	14-16	ML	10-13 ft bgs. SILT (ML), pale brown, micaceous, slightly sandy very fine grained.
16 17 18 19 20	15-20'	4'	NA		ML	15-19 ft bgs. SILT (ML), pale brown, micaceous, slightly sandy very fine grained.

AMEC	BORING LOG	TW-11 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/16/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/16/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
21 22 23 24 25	20-25'	5'	NA		ML/ SM	20-25 ft bgs. SILT (ML), pale brown, micaceous, slightly sandy very fine grained, with thin lenses of quartz gravel grading to Sandy SILT (SM), micaceous.
26 27 28 29 30	25-30'	4.3'	NA	26-28	ML/ SM	25-29.3 ft bgs. SILT (ML), pale brown, micaceous, slightly sandy very fine grained, grading to Sandy SILT (SM), brown, micaceous with small rock fragments. Groundwater at 29 ft bgs. Rod refusal at 29.3 ft bgs.
31 32 33 34 35	30-35'	NA	NA		SM	Sandy SILT (SM), pale brown to brown, micaceous with small rock fragments. Drill 29.3-42.0 ft using 2-inch diameter solid-stem augers. Static water level 30.75 ft btoc
36 37 38 39 40	35-40'	NA	NA		SM	Sandy SILT (SM), pale brown to brown, micaceous with small rock fragments.



AMEC	BORING LOG	TW-11 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/16/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/16/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
41 42	40-42'		NA		SM	Sandy SILT (SM), palebrown to brown, micaceous with small rock fragments. Drill 29.3-42.0 ft using 2-inch diameter solid-stem augers. Auger refusal on rock at 42.0 ft bgs.
						Boring Terminated at 42' bgs Well Set to 42.0' bgs End Cap 41.8-42.0' #10 slot 2" Sch 40 PVC screen: 31.8-41.8' bgs Clean Silica Sand 28-42' bgs Bentonite Seal 0-28' bgs Portland Grout at grade Stick up with no protective cover.

End Of Boring

prepared by: JAM - 5/17/12
checked by: RNQ 8/4/12

AMEC Environment & Infrastructure, Inc.

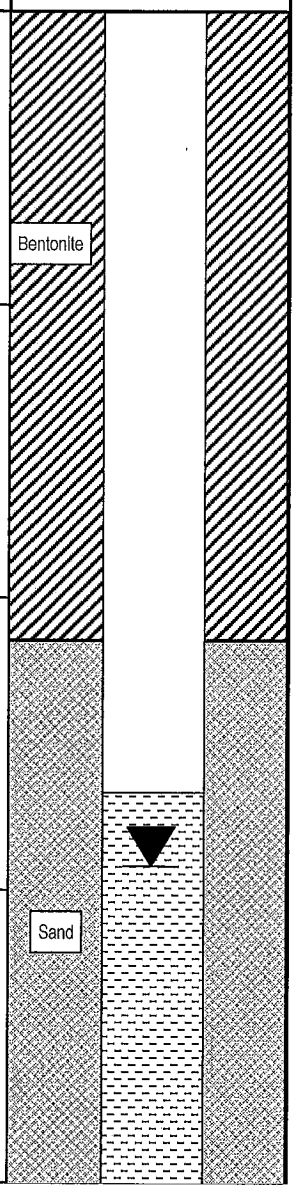
AMEC	BORING LOG	TW-12 (BORING ID.)

PROJECT: BFEL-Atlanta	
CLIENT: BFEL Indemnitor, Inc	PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia	DATE START: 5/16/12
TOP OF RISER ELEVATION:	DATE FINISH: 5/16/12
GROUND ELEVATION: ft DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig	FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel	
CORING METHOD: DPT	

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
1 2 3 4 5	0-5'	2'	NA	0-2	CL	0-0.37 ft bgs. Organic matter, roots and leaves. CLAY (CL) lean reddish-brown micaceous.
6 7 8 9 10	5-10'	0.5'	NA		SM	Sandy SILT (SM), pale brown, micaceous, fine grained, loose soil resulting in poor recovery.
11 12 13 14 15	10-15'	1'	NA	12-14	SM	Sandy SILT (SM), pale brown, micaceous, very fine grained.
16 17 18 19 20	15-20'	3'	NA		SM	15-18 ft bgs. Silty SAND (SM), pale brown to white, micaceous, very fine grained.

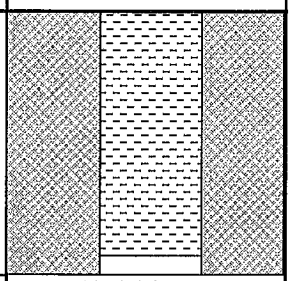
AMEC	BORING LOG	TW-12 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/16/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/16/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
21, 22, 23, 24, 25	20-25'	4'	NA	23-25	SM	20-24 ft bgs. Silty SAND (SM), pale brown to white, micaceous, very fine grained, very hard soils.
26, 27, 28, 29, 30	25-30'	0.5'	NA		SM	24-25.5 ft bgs. Silty SAND (SM), pale brown, with quartz fragments, micaceous, fine grained. Rod refusal at 25.5 ft bgs. No groundwater in soils 0-25.5 ft bgs.
31, 32, 33, 34, 35	30-35'	NA	NA		SM	Silty SAND (SM), pale brown, with quartz fragments, micaceous, fine grained. Drill 25.5-44.0 ft using 2-inch diameter solid-stem augers. Static water level at 34.80 ft btoc
36, 37, 38, 39, 40	35-40'	NA	NA		SM	Silty SAND (SM), pale brown, with quartz fragments, micaceous, fine grained.



AMEC	BORING LOG	TW-12 (BORING ID.)
PROJECT: BFEL-Atlanta		
CLIENT: BFEL Indemnitor, Inc		PROJ. NO. 6122080154
DRILLING CONTRACTOR: Geo Lab - Dacula, Georgia		DATE START: 5/16/12
TOP OF RISER ELEVATION:		DATE FINISH: 5/16/12
GROUND ELEVATION: ft	DATUM: Georgia State Plane (west zone)	DRILLER: GeoLab
DRILLING METHOD: Track-mounted Geoprobe® 7720DT Direct Push Technology (DPT) Rig		FIELD REP.:JAM
SAMPLING METHOD: 5-foot long Macro-Core® Core Barrel		
CORING METHOD: DPT		

DEPTH FT.	SAMPLE ID.	SAMPLE RECOVERY	BLOW COUNT (N)	ANALYTICAL SAMPLE	SYMBOL	IDENTIFICATION & REMARKS
41 42 43 44	40-44'	NA	NA		SM	Silty SAND (SM), pale brown, with quartz fragments, micaceous, fine grained. Drill 25.5-44.0 ft using 2-inch diameter solid-stem augers. Auger refusal on rock at 44.0 ft bgs.
						Boring Terminated at 44' bgs Well Set to 44.0' bgs End Cap 43.8-44.0' #10 slot 2" Sch 40 PVC screen: 33.8-43.8' bgs Clean Silica Sand 31-44' bgs Bentonite Seal 0-31' bgs Portland Grout at grade Stick up with no protective cover.



End Of Boring

prepared by: JAM - 5/17/12
checked by: RNQ 8/4/12

AMEC Environment & Infrastructure, Inc.

MONITOR WELL DEVELOPMENT LOG

1" = d x .041 Gal/ft

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other Peristaltic

Physical Parameters Testing Instrument: Hanna Pice # A00217 / Lamotte #1045

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

1 vol = 0.38 Gal

Project No.	6122080154
Sheet	1 of 1
Geol./Eng.	Jeff Mason

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-1	0.38		Peristaltic	5-29-12	10:42									
					10:47		6.27	0.37	21.8	18.5		0.15	NO	
					10:52		6.26	0.37	17.8	17.4		0.5		
					10:57		6.25	0.37	17.6 ↔	63.5		1		
					11:02		6.44	0.37	18.2 ↔	13.0	Slow Pump	1.4	Yes -	Drawdown to Bottom
					11:17	11:18	6.23	0.36	18.4 ↔	0.48	approx. 5 volumes	2	Yes	Drawdown to Bottom
			water clear - parameters stable - end Development											

Remarks

(1) TW-1 installed to 23' BGS DTW = 15.98 BTOC = 13.68 BGS (2.3' stickup)

(2)

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other Peristaltic

Physical Parameters Testing Instrument
Hanna Pine # A00217 / Lamotte # 10457

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

1 vol = 0.3 gal

Project No.	
Sheet	of
Geol./Eng.	Jeff Moore

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-2	0.3		Peristaltic	5-29-12	11:33		5.59	0.37	67.5	19.3	Cloudy at First	0.05	N	
					11:43		6.07	0.40	9.90	17.8	clearing	0.5	N	
					11:53		6.02	0.39	262	18.1	cloudy Again with Drawdown near Bottom	1.2	Close to Bottom Slow Pump	
					12:03		5.95	0.37	11.1	18.5	Clearing Again	2		
					12:08	12:09	5.97	0.37	5.4	18.5	END Development	2.4	clear	
					Appx. 8 volumes & clear									

Remarks

(1) TW-2 installed to 27.5' BGS DTW 22.41' BTOC = 20.21' BGS (2.2' stickup)

(2)

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041 xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other _____

Physical Parameters Testing Instrument

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

Project No.	
Sheet	1 of 1
Geol./Eng.	Daniel Howard

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-3	0.5	1	Bladder pump	5/29/12	1120	1205	3.98	1.50	>1000	22.6	very turbid	0.5		cycle time 6/min
	0.5 ~~1.0~~ DH	2	"	"	1205	1240	4.17	1.41 ~~20.0~~ DH	>1000	20.80	Very turbid	1.0		6/min
	0.5	3	"	"	1240 ~~1310~~ DH	1310	4.23	1.37	>1000	19.50	very turbid	1.5		6/min
	0.5 ~~2.0~~ DH	4	"	"	1310	1330	4.47	1.47	149	18.60	clearing, surged well	2.0		15/min
	0.5	5	"	"	1330	1350	4.29	1.36	132	18.80	clearing	2.5		15/min
	0.5	6	"	"	1350	1410	4.49	1.40	60.9	18.70	clearing	3.0		15/min
	0.5	7	"	"	1410	1425	4.43	1.37	25.6	19.0	clearing	3.5		15/min
	0.5	8	"	"	1425	1440	4.41	1.35	14.4	19.2	clear	4.0		15/min
	0.3	9	"	"	SH ~~N~~ 1440	1450	—	—	11.1 DH	—	clear	~~4~~ 4.25 DH		15/min

Remarks

(1) TW-3 installed to 36.6 BGS DTW 26.85 36.6 + 3.4 stickup = 40 Ft − 26.85 = 13.15 water column X 0.41 = 0.54 gal

(2) Pump is sitting at bottom of well 0.54 ~~5.5~~ X 5 = 2.7 g (5 well vol)

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041 xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other _____

Physical Parameters Testing Instrument

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

Project No.	
Sheet	1 of 1
Geol./Eng.	Daniel Howard

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-4	0.25	1	Bladder pump	5/29/12	1545	1610	5.38	0.43	498	21.2	very turbid	0.25		
	0.25	2	"	"	1610	1630	5.02	0.43	>1000	20.0	very turbid, surged	0.5		
	0.25	3	"	"	1630	1645	5.07	0.44	245	19.3	turbid, surged	0.75		
	0.25	4	"	5/30/12	0900	0920	4.87	0.45	74.5	18.4	clearing, surged	1.0		
	0.25	5	"	"	0920	0940	5.04	0.44	53.9	18.1	clearing	1.25		
	0.25	6	"	"	0940	1000	5.06	0.44	44.8	18.3	clearing	1.50		
	0.25	7	"	"	1000	1020	5.04	0.45	22.0	18.5	clear	1.75		

Remarks

(1) TW-4 installed to 32.3' BGS DTW = 27.70 BTOC 32.3 + 1.8 (stickup) = 34.1 ft − 27.70 = 6.4 (water column) × 0.41 = 0.26 gal × 5 = 1.3 gal (5 vol)

(2) well is slow recharge

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041 x4

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other Peristaltic

Physical Parameters Testing Instrument

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

0.43 = 1 vol

Project No. 6122080154
Sheet 1 of 1
Geol./Eng. Jeff Moore

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-5	0.43		Peristaltic	5-29-12	12:47						very muddy at start			
					1:00						Still very silty	1.2	No	
					1:14						Clearing	2.5	No	
					1:27		4.43	1.25	416	17.8		3.8	No	24.05 water level
					1:40	1:40	4.45	1.25	227	17.8	end development	5	No	
					Should do better when low flow sampling - >10 well volumes pumped									

Remarks

(1) TW-5 installed to 30' BGS DTW = 22.55 BTOC = 19.55 BGS (3' stickup)

(2) Max Drawdown with peristaltic = 24.05 BTOC at appx. 0.1 gpm

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041 xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other _____

Physical Parameters Testing Instrument
HANNA 991301

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

Project No. 612280154
Sheet 1 of
Geol./Eng. T. PARKER

well 5-29-12

Well ID	~~Borehole~~ Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. ~~(mS/cm)~~ mS	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-6	0.6	1	0.75" bladder	5/29/12	12:40 5-29-12	13:12	4.88	1.76	1.986 5-29-12	19.1	O, SED much, no odor	0.6	NO	
TW-6	1.2	2		5/29/12	13:12	13:30	4.92	1.82	2.486	19.0	O, SED much, no odor	1.2		
TW-6	1.8	3		5/29/12	13:30	13:51	4.88	1.84	271	19.4	O, SED much, no odor	1.8		
TW-6	2.4	4		5/29/12	13:51	14:05	4.96	1.86	128	19.1	T, Little, no odor	2.4		
TW-6	3.0	5		5/29/12	14:05	14:24	4.90	1.88	68.2	19.1	C, Trace, no odor	3.0		
TW-6	3.6	6		5/29/12	14:24	14:45	4.92	1.86	40.5	19.2	C, Trace ~~None~~ 5-29-12 no odor	3.6		
TW-6	4.2	7		5/29/12	14:45	15:05	4.87	1.86	27.8	19.2	C, TRACE, no odor	4.2		
TW-6	4.8	8		5/29/12	15:05	15:24	4.78	1.88	26.5	19.4	C, none, no odor	4.8		
TW-6	5.4	9		5/29/12	15:24	15:44	4.80	1.88	20.1	19.4	C, none, no odor	5.4		

Remarks

(1) TW-6 installed to 37.9' BGS DTW=25.71' BTOC STICKup = 2.4'

(2) ~~TD = 40.3' × 0.041 = 1.65 gal~~ TD = 40.3 - 25.71 = 14.59' water column × 0.041

(3) 1 vol. = 0.6 gal.

(4)

MONITOR WELL DEVELOPMENT LOG

.041 × d

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other _____

Physical Parameters Testing Instrument
HANNA 991301

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

Project No. 6122-08-0154
Sheet 1 of 1
Geol./Eng.

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (mS/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-7		1	Bailer to initial clear	5-29-12	~~[illegible]~~ 16:00						Bailed 1.5 gal to near dry terminated.	1.5	yes	
TW-7		~~[illegible]~~ 0	bladder pump	5-30-12	10:48	10:48	3.93	6.44	97.6	19.6	T, Trace, Slight organic odor	2.0	No	
TW-7		1	bladder pump	5-30-12	10:48	11:18	3.89	7.37	5.83	19.9	pumping AIR + WATER	3.0	yes ~~No~~	5-30-12
TW-7				5/30/12	11:20	Stop pumping. Turbidity is < 10 NTU, mostly AIR in								
TW-7.				Line because well is ~~mostly~~ dry.										

Remarks

(1) TW-7 installed to 31' BGS DTW = 21.41 BTOC = 20.11 1.3' stick up

T.D. = 32.3' btoc

(2) WATER Column = 10.89'

(3) 1 vol. = 0.45 gal. (1,703 ml)

(4)

MONITOR WELL DEVELOPMENT LOG

.041xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other _____

Physical Parameters Testing Instrument

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

1 vol = 0.43 gal

Project No. 6122080154
Sheet 1 of 1
Geol./Eng. Jeff Moore

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-8	.43		Peristaltic	5-29-12	2:03						Slightly cloudy at start			
					2:18		6.45	2.34	174	18.5	cleared up nicely slow pump	1.5	N	
					2:40		6.44	2.35	43	18.5		3.5	N	
					2:50	2:51	6.41	2.12	23.8	19.0	End development	4.5		
							>10 volumes &	relatively	clear-		Stabilize at [illegible] flow			

Remarks

(1) TW-8 installed to 29.5 DTW = 19.90 BTOC = 18.986 S

(2) Strong Chemical Odor in Groundwater

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041 xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other Peristaltic

Physical Parameters Testing Instrument

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

1 vol = .48 gal

Project No.
Sheet of
Geol./Eng.

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-10	.48		Peristaltic	5-29-12	3:25		4.36	1.05	>1000	17.9				
					3:45		4.36	0.92	293	17.3		2.5	N	
					4:05		4.36	0.91	565	17.5		5	N	
					4:25		4.37	0.89	230	17.7		7.5	N	
			End For Today - Pump again tomorrow											
				5-30-12	8:30 - Pumping Again									
					9:12	9:15					6 Gal today so far & clearing	13.5	N	Visually Clear
					Visually Clear & Should be ok to low-flow sample									
					9:27 - Pumped Another 1.5 Gal from very bottom & all silt/Sediment removed							15	N	

Remarks

(1) TW-10 installed 29.4' BGS DTW = 18.30 BTOC = 17.76' BGS 0.63' stick up

(2)

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other _____

Physical Parameters Testing Instrument

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

Project No.	
Sheet	of
Geol./Eng.	Daniel Howard

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-11	0.5	1	Bladder pump	5/30/12	1220 ~~1150~~	1240	4.60	0.40	>1000	18.6	very turbid, surged	0.5		
	0.5	2	"	"	1240	1300	4.55	0.43	>1000	17.8	very turbid, surged	1.0		
	0.5	3	"	"	1300	1320	4.44	0.44	292	17.7	turbid, surged	1.5		
	0.5	4	"	"	1320	1335	4.49	0.33	>1000	18.1	turbid, surged	2.0		
	0.5	5	"	"	1335	1350	4.40	0.44	>1000	18.3	turbid	2.5		
	0.5	6	"	"	1350 ~~1140~~	1405	4.37	0.44	104.3	18.2	clearing	3.0		
	0.5	7	"	"	1405	1415	4.33	0.44	35.9	18.0	clearing	3.5		
	0.5	8	"	"	1415	1430	4.32	0.43	14.7	18.	clear	4.0		

Remarks

(1) TW-11 installed to 42' BGS DTW = 30.75 BTOC 42+3.1 = 45.1 − 30.75 = 14.35 x 0.041 = 0.6 x 5 = 3.0 gal

(2)

(3)

(4)

MONITOR WELL DEVELOPMENT LOG

.041 xd

Well Volume Calc. (Use tenths of feet only)
(3.1416) (r^2) = $ft.^2$
($ft.^2$) (ft. of water) = $ft.^3$
($ft.^3$) (7.4805) = gal.

Develop. Method Key
B - Bailer
SB - Surge Block
SP - Submersible Pump
WP - Whale Pump
OT - Other _____

Physical Parameters Testing Instrument
Hanna 991301

Observations Key
Clear (C), Translucent (T), or Opaque (O); Color;
Sediment (SD) - Trace, Little, Some, or And; Odor

Project No.	6122-08-0159
Sheet	1 of 1
Geol./Eng.	T. Parker

Well ID	Borehole Vol. (gal.)	Vol. number	Develop. method	Date	Time Start	Time Finish	pH (s.u.)	Spec. cond. (ms/cm)	Turbidity (NTU)	Temp. (°C)	Observations	Total vol. (gal.)	Purged dry?	Remarks
TW-12		Ø	bladder pump	5/30/12	12:40	12:45	6.53	0.41	571	19.1	O, much Sed., No odor	0.25	No	
TW-12		1		5/30/12	12:45	13:00	6.27	0.33	481	18.4	O, much fine Sed, No odor	0.75	No	
TW-12		4		5/30/12	13:00	13:42	6.45	0.37	19.9	19.2	C, TRACE, No odor	2.0	No	
TW-12		5		5/30/12	13:42	14:00	6.67	0.38	245.	18.8	Surged pump up & down in well	2.5	No	
TW-12		6		5/30/12	14:00	14:20	6.47	0.37	174	18.8	T, TRACE, No ODOR	3.0	No	
TW-12		7		5/30/12	14:20	14:40	6.41	0.36	15.7	18.5	C, None, No ODOR	3.5	No	
TW-12		8		5/30/12	14:40	15:00	6.40	0.36	10.41	18.7	C, None, No ODOR	4.0	No	
TW-12		9		5/30/12	15:00	15:20	6.38	0.37	9.06	18.8	C, None, No odor	4.50 4.2	No	

Remarks

(1) TW-12 installed to 44' BGS DTW = 34.79 BTOC 44 + 1.8' = 45.8 − 34.79 = 11.01' water column

(2) 0.45 gal / volume.

(3)

(4)

AMEC E&I

Sample Log

Boring/Well SB-A-1 SW Project/No. _____ Date 5·22 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1'	10:52	offset 0-5' sample due to Asphalt-rock & gravel, Brick & organics
3	5	1'	10:52	Lean Clay, Brown, moist, micaceous
6	8	2'	10:49	Lean Clay - Red Brown - moist - micaceous
8	10	2'	10:49	
10	12	1.4	10:57	Lean Clay - Red Brown - moist - micaceous - fine
12	14	1.4	10:57	Grades to Silt - Red Brown - moist - very fine
14	16	2	11:02	As above

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Sample Log

Boring/Well SB-A-2 Project/No. _____ Date 5-22 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	2:15	Sandy Silt - Brown - with gravels - compact
3	5	2'	2:15	Fill - Sandy Silt - Dark Brown & Red Brown or Pale Brown with rock gravels Brick
6	8	1.5'	2:20	Silty Sand - Dark Brown on top of Lean Clay fill - moist w/possible porcelain water - clay is purple
8	10	1.5'	2:20	Purple - Dark Red - Lean Clay on top of Gravels Sand to 9' then Silt - Brown - moist - micaceous - septic odor in rock gravels clay
10	12	2'	2:28	Lean Clay - Dark Brown to Brown - moist - fine - micaceous - septic odor
12	14	2'	2:28	As above
14	16	2'	2:33	Lean Clay - Brown - moist micaceous - fine - large chunk of Quartz at 14.6'

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Sample Log

Boring/Well SB-A-3 NW Project/No. _____ Date 5-22 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.1	11:43	Rock, Gravel, Organics & Sand w/ Lean Clay at bottom
3	5	2'	11:43	Lean Clay - Brown - moist - low plasticity
6	8	2'	11:50	Lean Clay - Brown - Red Brown moist micaceous
8	10	2'	11:50	As above
10	12	2'	11:56	Silt - Brown - Red Brown - moist - micaceous - very fine
12	14	2'	11:56	as above with increasing silt
14	16	2'	12:00	Sandy Silt - Light Brown - moist - micaceous

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Sample Log

Boring/Well SB-A-4 NE Project/No. _____ Date 5-22-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.3	1:02	Lean Clay - Red Brown - moist - micaceous - fine - Some brick fragments
3	5	1.3	1:02	As above no brick
6	8	2'	1:07	As above becoming Sandy Silt - Yellow Brown - moist - very fine - micaceous
8	10	2'	1:07	Sandy Silt - Yellow Brown - moist - micaceous - very fine
10	12	2'	1:12	Sandy Silt - Brown - moist - micaceous - very fine
12	14	2'	1:12	As above
14	16	2'	1:17	Sandy Silt - Brown - moist - micaceous - very fine - weak parent rock structure

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Sample Log

North Central

Boring/Well SB-A-5 Project/No. _____ Date 5-22-12 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	1:40	~~Lean Clay~~ Red Brown - moist - micaceous - fine
3	5	2'	1:40	
6	8	2'	1:44	Silt - Brown - moist - micaceous - very fine - slight Sand
8	10	2'	1:44	As above
10	12	2'	1:50	Silt - Brown - moist - very micaceous - very fine
12	14	2'	1:50	As above
14	16	2'	1:55	Silt - Brown - moist - very micaceous - very fine

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Sample Log

Boring/Well SB-A-6 Project/No. _____ Date 5-22 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.6	4:00	Thin Loamy layer to 0.2 Then Concrete & Brick with Sand-Yellow Brown & Red
3	5	1.6	4:00	Silty Sand-Yellow Brown with Brick fragment & Rock
6	8	2'	4:04	Silty Sand-Yellow-moist-fine w/ rock fragments to 6.4 Then Lean Clay-Red Brown-moist-micaceous
8	10	2'	4:04	Lean Clay-Red Brown-moist-micaceous-grading to more of a Silt
10	12	2'	4:10	Silt-Brown-moist-micaceous-very fine
12	14	2'	4:10	As Above
14	16	2'	4:17	As above-weak relict rock structure

SB-A-14-16 Composite Does not Have Only SB-B-6

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Sample Log

Boring/Well SB-B-1 NE corner Project/No. _____ Date 5-23-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter 2 Inches Type of Sample/ Coring Device 5' macrocore

Length and Diameter of Sample Device 5' x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated. Datum _____

Drilling Fluid Used NA Drilling Method DPT

Drilling Contractor GeoLab Driller Jason M Helper R.D.

Prepared By Jeff Moore Hammer Weight NA Hammer Drop NA ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.4	12:30	Brick gravel - Sand & Lean Clay - Red Brown - moist
3	5	1.4	12:30	Silty Sand - Purple - medium grained w/ wood Fragments & gravel & Lean Clay pale Brown - moist
6	8	2'	12:35	Lean Clay - Pale Brown - moist - Grading to FAT Clay - Red Brown - moist very fine
8	10	2'	12:35	FAT Clay - Red Brown - moist - very fine - high plasticity
10	12	2'	12:43	FAT Clay - Brown - moist - very fine

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Sample Log

Center East line

Boring/Well SB-B-2 Project/No. _____ Date 5-23 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller Jason M Helper R.D.

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description	
0	2	1.7	10:20	Sandy Silt - Brown with Brick & gravel	
3	5	1.7	10:20	Sandy Silt - Dark Brown with brick to 4.5 then Becoming Lean Clay - Brown Gray - slight chemical odor	
6	8	2'	10:24	Lean Clay - Brownish Gray - moist (very) low plasticity - fine - chemical odor PID = 10 ppm	
8	10	2'	10:24	As above to 9.3 then Silty Sand - Cinder like - Dark Brown + Red Brown - moist to 9.8 then Lean Clay Again Strong Chemical Odor	Fill
10	12	2'	10:30	Lean Clay - Pale Brown - moist - fine - mottled - Strong chemical odor to 11.7 Then Lean Clay - Black - moist - fine	PID = 11.2

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Sample Log

SE corner

Boring/Well SB-B-3 Project/No. _____ Date 5-23 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.8	1:08	Sandy Silt - Brown with rock fragments & root lots - moist
3	5	1.8	1:08	Sandy Silt w/ rock fragments to 4' then Silty sand - Dark Brown to 4.8 Then Silt - Brown - micaceous - very fine
6	8	2'	1:12	Silt - Brown - micaceous - moist very fine - slight sand
8	10	2'	1:12	
10	12	2'	1:17	Silt - Brown - micaceous - moist - very fine

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Sample Log

Boring/Well SB-B-4 Project/No. _____ Date 5-23 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	10:54	Sandy Silt, Roots, Gravels Brick to 0.5' then Lean Clay - Brown - moist micaceous
3	5	2'	10:54	Lean Clay - Brown - moist - micaceous Grading to Silt - Slight sand - Brown moist - micaceous
6	8	2'	10:59	Sandy Silt - Yellow Brown - moist - fine
8	10	2'	10:59	As above
10	12	2'	11:04	Sandy Silt - Yellow Brown - moist - very fine

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Sample Log

west Central

Boring/Well SB-B-5 Project/No. _____ Date 5-23 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ Ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.3	9:08	Fill- Silty Sand & gravel with Lean Clay- Dark Brown & Red Brown
3	5	1.3	9:08	As above
6	8	2'	9:12	Silty Sand- Dark Brown- w/ rootlets - moist - fine grained
8	10	2'	9:12	As above
10	12	2'	9:16	As above to 11.7' Then Lean Clay - Gray Brown - moist - fine

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Sample Log

B JAm 5-22-12

Boring/Well SB-~~A~~-6 SW Project/No. _____ Date 5-22-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.6	3:10	Gravel & Sand & Lean Clay - Purple - moist - fine to coarse (Gravel)
3	5	1.6	3:10	Lean Clay - Purple to 3.2 Then Brick & Gravel & Silty Sand - Dark Brown
6	8	1.3	3:15	Fill - Sand & Gravel & Silt - Purple & Dark Gray - resembles SB-A-2. Septic odor
8	10	1.3	3:15	Gravel & Sand - Dark Gray & Purple - Septic odor. Becomes Purple & Silty at 9.5' then Silt, Sand with Gravel - light Gray & Brown - possible partial water - septic odor & root bits
10	12	2'	3:20	Lean Clay - Red Brown - moist - micaceous
12	14	2'	3:20	As above
14	16	2'	3:30	Silt - Brown - moist - micaceous - very fine
	mistook originally for SB-A-6 & then only took 0-2, 3-5, 6-8, 8-10, 10-12			
	For Lab Hold Arsenic - Pesticides, Copper & Zinc			
Resampled to 12' on 5-23-12 For Area B Composites				

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Sample Log

central

Boring/Well SB-B-7 Project/No. _____ Date 5-23-12 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description	
0	2	2'	9:30	Lean Clay - Greenish Gray - moist - med to low plasticity - terrible strong odor	
3	5	2'	9:30	Fat Clay - Brownish Gray - moist - med plasticity - strong chemical odor PID readings of 53 ppm	
6	8	2'	9:35	FAT Clay - Brownish Gray - moist - med plasticity - strong chemical odor	PID = 49
8	10	2'	9:35	Lean Clay - Dark Gray - moist - fine - strong chemical odor	PID = 53
10	12	2'	9.44	As above w/ some gravel - very moist - strong chemical odor	

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Sample Log

Boring/Well SB-E-1 NE Project/No. 6122080154 Date 5-21-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started ____ Drilling Completed ____

Total Depth Drilled ____ Feet Hole Diameter 2 Inches Type of Sample/ Coring Device 5' macrocore

Length and Diameter of Sample Device ____ Sampling Interval Continuous feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used NA Drilling Method ____

Drilling Contractor GeoLab Driller Jason McBride Helper R.D.

Prepared By Jeff Moore Hammer Weight ____ Hammer Drop ____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2'	2'	9:24	Silty Sand w/ Rock, Brown to Light Brown, moist, fine to medium
2	4	2'	9:24	Sandy silt - Brown w/ rock fragments, moist, fine to medium
		Hold	0-2 & 2-4	for Pesticides & 2,4 Dinitrotoluene

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Sample Log

Boring/Well SB-E-2 SE Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	9:37	Organics & Silt - Dark Brown to Brown w/ rock fragments - moist
2	4	2'	9:37	Silt - Brown - micaceous - moist with rock fragment & some Black cinder-like material

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Sample Log

Boring/Well SB-E-3 SW Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	3.4	9:45	Sandy Silt - Brown to 1' Then Purple-ish colored silty sand - moist
2	4		9:45	fine to medium

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Sample Log

NW

Boring/Well SB-E-4 Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2	9:56	Brick-rock & Sand/Silt - Red Brown to Brown
2	4	2	9:56	Clayey Sand - Grayish Brown

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Sample Log

Center

Boring/Well SB-E-5 Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.8	10:03	organics to 0.2 then Silty Sand - Brown to purple - moist - fine
2	4	1.8	10:03	Silty Sand - Purple - moist - fine

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Sample Log

Boring/Well SB-F-1 NW Project/No. _____ Date 5-21 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter 2 inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2	11:15	Sandy Silt - Brown - micaceous - Moist
2	4	2	11:15	
	HOLD 0-2 & 2-4			For Pesticides, Lead, Arsenic, Copper, Zinc

AMEC E&I

Sample Log

Boring/Well SB-F-2 NE Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2	12:02	Lean Clay - Brown - moist - trace rock fragments
2	4	2	12:02	Silty Sand - Dark Brown - with rock fragments - Fill

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Sample Log

Boring/Well SB-F-3 SIE Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method HAND Auger

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	1:20	Lean clay - Red Brown & Brown - moist
2	4	4'	1:20	As above - moist - micaceous - fine

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Sample Log

Boring/Well SB-F-4 SW Project/No. _____ Date 5-21 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ Inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	11:21	Silty Sand - Brown - moist - micaceous
2	4	2'	11:21	

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Sample Log

Boring/Well SB-F-5 center Project/No. _____ Date 5.21 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.5	11:46	Fill - Silty Sand - Red Brown with rocks Brick Fragments - moist
2	4	1.5	11:46	

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Sample Log

Boring/Well SB-G-1 Project/No. _____ Date 5-21 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.7	1:55	Silty Sand - Purple - fine - few rocks
2	4	1.6	1:55	As above
4	6	2'	2:00	Sandy Silt - Pale Brown - moist - micaceous - becoming Silty Sand - light Brown very fine

AMEC E&I

Sample Log

Boring/Well SB-G-2 Project/No. _____ Date _____ Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2	2:22	Lean Clay - Red Brown - moist - micaceous - fine - Some rock fragments
2	4	2	2:22	As above to 3' Then Silty Sand - Brown - fine - moist + lean grades back to lean clay
4	6	2	2:27	Lean Clay - Red Brown - moist - micaceous - Slight Sand

AMEC E&I

Sample Log

Boring/Well SB-6-3 Project/No. _____ Date _____ Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2	2:50	Silty Sand - Brown - tan rock (fill) & Loam Clay - Red Brown - moist micaceous
2	4	2	2:50	Silty Sand - Red Brown - micaceous - fine - few rock fragments
4	6	2'	2:55	Sandy Silt - Brown - moist - micaceous

AMEC E&I

Sample Log

Boring/Well SB-6-4 Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ Ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.8	3:05	Silty Sand w/ Bricks & Cinders to 1' Then Lean Clay - Red Brown
2	4	1.7	3:05	Lean Clay Grading to Silty Sand - Brown - moist - very fine
4	6	2'	3:10	Silty Sand as above - Brown to Pale Brown

AMEC E&I

Sample Log

Boring/Well SB-G-5 Project/No. _____ Date 5-21 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ Inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.8	2:10	Silty Sand - Dark Brown - moist - fine, grading to Pale Brown - very fine
2	4	1.8	2:10	Silty Sand - Pale Brown to Light orange - very fine - moist
4	6	2'	2:14	As above

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Sample Log

Boring/Well SB-H-1 NW Project/No. _____ Date 5-23-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

Arsenic Lead Copper Zinc

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.7	2:11	Sandy Silt - Brown & Pale Brown with gravel - moist
3	5	1.7	2:11	Layer of gravel at top then Silt - Brown - micaceous - fine - moist
6	8	2'	2:16	Lean Clay - Brown - moist - low plasticity - micaceous
8	10	2'	2:16	As above
10	12	2'	2:21	Lean Clay - Brown & Dark gray - moist - fine
14	16	2'	2:26	As above

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Sample Log

NE

Boring/Well SB-H-2 Project/No. _____ Date 5-23-12 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.3	2:42	Silty Sand Dark Brown to Purple - medium grained - crunchy
3	5	1.3	2:42	
6	8	2'	2:47	Lean Clay - Red Brown - Moist - Fine - micaceous
8	10	2'	2:47	
10	12	2'	2:53	Asphalt
14	16	2'	2:57	Silt - Red Brown - moist - micaceous - very fine

PID = 0

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Sample Log

Boring/Well SB-H-3 SE Corner Project/No. _____ Date 5-23-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.3	3:41	Organics- Brick, Silty Sand - Pale Brown & Lean Clay- Red Brown- moist
3	5	1.3	3:41	Lean Clay-Red Brown with - Silt- Pale Yellow & Silty Sand Dark Brown-crunchy w Brick fragments
6	8	1.7	3:46	Gravel, Cinders & Silty sand, Dark Brown & Purple-Crunchy - medium to coarse
8	10	1.7	3:46	Silty Sand, Dark Brown to Purple, with cinder chunks,
10	12	2'	3:51	Silty Sand, Dark Brown to Purple, Crunchy, w/ rock fragments
14	16	2'	3:56	Same as above

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Sample Log

Boring/Well SB-H-4 SW Project/No. _____ Date 5-23-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.3	4:16	Sandy Silt-Brown with rock & gravel & organics & Silt-Pale Brown & Silty Sand Brown
3	5	1.3	4:16	Rock fragments & Silt-Pale Brown & Lean Clay Red Brown
6	8	1.5	4:21	Silty Sand with rock fragments & wood-Dark Brown-Crunchy
8	10	1.5	4:21	Silty Sand-Dark Brown to Purple-few rock frags-Crunchy
10	12	2'	4:26	As above
14	16	2'	4:31	FAT CLAY-Red Brown-high plastic, dry-Slight sand-moist-micaceous

14 60
4 65
56
4
71

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Sample Log

Boring/Well SB-14-5 center Project/No. _____ Date 5-23-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.7	3:08	Silty Sand - Dark Brown Purple - Crunchy with Silt - Pale Brown - moist - firm
3	5	1.7	3:08	Silt as above w/ thin layers of silty sand & Yellow Brown Grading to Lean Clay - Red Brown
6	8	2'	3:15	Lean Clay - Red Brown - moist - micaceous - fine - grades to Silt - Brown - [illegible] very fine
8	10	2'	3:15	As above
10	12	2'	3:20	Lean Clay - Red Brown - micaceous - fine - moist
14	16	2'	3:25	As above

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Sample Log

Boring/Well SB-W101-1 NE Project/No. _____ Date 5-24-12 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2	11:19	Silty Sand - Brown with gravel & rock (cinder) fragments
2	4	2	11:24	as above

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Sample Log

Boring/Well SB-W101-2 SE Project/No. _____ Date 5-24-12 Page 1 of ____

Site Location BFEL - Atlanta

Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2	11:31	Silty Sand - Brown with gravel rock & brick fragments
2	4	2	11:36	As above - less gravel or rock - no brick

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Sample Log

Boring/Well SB-W101-3 SW Project/No. _____ Date 5-24-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	11:44	Silty Sand - Brown - with rock & gravel (cinder).
2	4	2'	11:50	as above

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Sample Log

Boring/Well SB-W101-4 Project/No. _____ Date 5-24-12 Page 1 of ____

Site Location BFEL - Atlanta

Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ Inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2'	2'	11:55	Silty Sand - Brown - Slight clay - with Some gravel & Dark gray Cinder Frag mat'ls.
2	4'	2'	12:04	as above

2 14 6 84

184 17 101

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Sample Log

North East

Boring/Well SB-HIII-1 Project/No. _____ Date 5-24-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.8	10:14	Silty Sandy rock fragments - Yellow Brown - loose -
2	4	2'	10:17	As above
4	6	2'	10:22	Silty Sand - Pale Brown - moist - few gravels
6	8	2'	10:22	As above to 6.2' then Grades Rapidly to Silt then Lean Clay - Red Brown - moist

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Sample Log

Boring/Well SB-H11-2 SE Project/No. _____ Date 5-24-11 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter 2" inches Type of Sample/ Coring Device 5' macrocore

Length and Diameter of Sample Device 5' x 2" Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller Jason M. Helper R.D.

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

Arsenic, Lead, Copper, Zinc

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.2	9:00	Sandy Silt - Brown - w/ Gravel - moist - loose
2	4	1.2	9:00	Silty Sand - Brown - w/ some brick - moist - fine grained
4	6	2'	9:08	Sand, Gravel, Brick, Brown - medium to coarse with cinder-like chunks
6	8	2'	9:08	As above to 7' then FAT Clay - Brown to Red Brown - moist - micaceous

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Sample Log

Boring/Well SB-Hill-3 SW Project/No. 6122080154 Date 5-24-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started ____ Drilling Completed ____

Total Depth Drilled ____ Feet Hole Diameter ____ inches Type of Sample/ Coring Device ____

Length and Diameter of Sample Device ____ Sampling Interval ____ feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used NA Drilling Method ____

Drilling Contractor GeoLab Driller ____ Helper ____

Prepared By Jeff Moore Hammer Weight ____ Hammer Drop ____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.3	9:27	Silty Sand - Pale Brown w gravel & rootlets - moist
2	4	1.3	9:27	Sandy Silt - Pale Brown w/ trace gravel - moist - fnp
4	6	2'	9:32	As above with more gravel & cinder material
6	8	2'	9:32	As above to 7.3' then Sandy Lean Clay - Brown - moist - micaceous

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5/13/2012

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Sample Log

NW

Boring/Well SB-NW11-4 Project/No. _____ Date 5-24-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	9:51	Silty Sand - Pale Brown & Red Brown w/ Gravel - moist
2	4	2'	9:53	Silty Sand - Brown & Red Brown w/ Gravel & Brick
4	6	1.9	9:56	Lean Clay - Brown & Red Brown - Sandy in zones - moist
6	8	1.9	9:56	As above

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Sample Log

Boring/Well SB-SS2-1 Project/No. 6122080154 Date 5-22-12 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started ____ Drilling Completed ____

Total Depth Drilled ____ Feet Hole Diameter ____ inches Type of Sample/ Coring Device ____

Length and Diameter of Sample Device ____ Sampling Interval Continuous feet

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Drilling Fluid Used NA Drilling Method ____

Drilling Contractor GeoLab Driller Jason M Helper R.D

Prepared By Jeff Moore Hammer Weight ____ Hammer Drop ____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	8:55	Silty Sand - Brown - moist - micaceous - very fine
2	4	2'	8:55	

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Sample Log

Boring/Well 513-552-2 Project/No. _____ Date 5-22 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	9:03	Silty Sand - Brown & Red Brown - micaceous - very fine
2	4	2'	9:03	

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Sample Log

Boring/Well SB-SS2-3 Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta

Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.5	9:11	Sand, Silt with rock & organics - moist - Dark Brown
2	4	1.5	9:11	Sand, Silt - Brown - micaceous - moist - fine grained

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Sample Log

Boring/Well SB-SS2-4 Project/No. _____ Date 5-21 Page 1 of ____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) — GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1'	9:16	Rock, Gravel & RR crosstie to 1' Then rock Gravel - Sand & Silt - Dark Brown to Brown - Strong creosote odor. & Brick
2	4	2'	9:16	Silt - Yellow Brown - moist - micaceous - very fine
			50 ppm	PID reading from borehole due to x-tie

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Sample Log

Boring/Well SB-SS3-1 Project/No. _____ Date 5-22 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.2	9:56	Silty Sand - Brown - moist - micaceous - very fine
2	4	1.2	9:56	Grades to Silt - Slight Sand - light Brown - moist - micaceous

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Sample Log

Boring/Well SB-553-2 Project/No. _____ Date 5-22-12 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	2'	10:08	Silty Sand - Brown to light Brown - moist w rock fragments
2	4	2'	10:08	Silty Sand - light Brown - moist - micaceous - very fine

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Sample Log

Boring/Well SB-SS3-3 Project/No. _____ Date 5-22 Page 1 of _____

Site Location BFEL - Atlanta Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval _____ feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1'	10:03	Silty Sand - light Brown - moist - very fine - loose
2	4	1'	10:03	

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Sample Log

Boring/Well SB-SS3-4 Project/No. _____ Date 5-22 Page 1 of ____

Site Location BFEL - Atlanta

Drilling Started _____ Drilling Completed _____

Total Depth Drilled _____ Feet Hole Diameter _____ inches Type of Sample/ Coring Device _____

Length and Diameter of Sample Device _____ Sampling Interval Continuous feet

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Drilling Fluid Used NA Drilling Method _____

Drilling Contractor GeoLab Driller _____ Helper _____

Prepared By Jeff Moore Hammer Weight _____ Hammer Drop _____ ins.

Sample Depth (feet below land surface) GROUP NAME (USCS), Color (Munsell), consistency, moisture, particle size range, component %, other

From	To	Recovery (feet)	Time	Sample/ Description
0	2	1.3	9:59	Silty Sand - Light Brown - moist - fine - loose
2	4	1.3	9:59	