Well Installation and Sampling
Assunpink Creek Restoration Project
Trenton, New Jersey

Project Summary Report

Prepared for

U.S. Army Corps of Engineers
Philadelphia District

Under

Contract No. W912BU-10-D-0001
Task Order: 0010

Project Name

Well Installation and Sampling
Assunpink Creek Restoration Project
Trenton, New Jersey

August 2011

Prepared by

O'BRIEN & GERE

FINAL

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Acronyms and Abbreviations

ASOS	Automated Surface Observing Station
ASTM	American Society for Testing and Materials
BOD	Biological Oxygen Demand
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
DHS	Department of Human Services
DO	Dissolved Oxygen
EPH	Extractable Petroleum Hydrocarbons
FSP	Field Sampling Plan
Ft	feet
ft bgs	Feet Below Ground Surface
FWCAC	Fresh Water Chronic Aquatic Criteria
GWQC	Ground Water Quality Criteria
HSA	Hollow Stem Auger
IDW	Investigation Derived Waste
IGW SSL	Impact To Ground Water Soil Screening Level
LSRP	Licensed Site Remediation Professional
NJAC	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
NJGS	New Jersey Geological Survey
N-RDCSRS	Non-Residential Direct Contact Soil Remediation Standards
NTU	Nephelometric Turbidity Units
mg/kg	Milligrams Per Kilogram
mg/L	Milligrams Per Liter
mS/cm	MilliSiemens Per Centimeter
MS/MSD	Matrix Spike/Matrix Spike Duplicate
mV	Millivolts
ORP	Oxidation Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PPM	Parts Per Million
PSL	Project Screening Level
PQL	Practical Quantitation Limit
PVC	Polyvinyl Chloride
QA	Quality Assurance
QC	Quality Control
RDCSRS	Residential Direct Contact Soil Remediation Standards
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SOW	Scope Of Work
SPT	Standard Penetration Test
su	Standard Units
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCDD	2,3,7,8-Tetrachlorodibenzodioxin
TCL	Target Compound List

TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TRSR	Technical Requirements For Site Remediation
TSS	Total Suspended Solids
TSULL	Trenton Sewer Utility Local Limit
TTO	Total Toxic Organics
USACE	United States Army Corps of Engineers
VOC	Volatile Organic Compound
µg/L	Micrograms Per Liter

1. Introduction

1.1. Purpose and Objective

This Summary Report has been prepared by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) to fulfill the requirements of Task Order 0010 (*Scope of Work, Monitor Well Installation and Sampling, Assunpink Creek, Trenton, New Jersey*, USACE, January 18, 2011), under USACE contract number W912BU-10-D-0001. The Scope of Work (SOW) for this Task Order is included in Appendix A. On April 14, 2011 and May 6, 2011, USACE added Modifications 001 and 002 (respectively) to the SOW to amend some of the activities and procedures included in this project. The SOW Modifications (001 and 002) are also included in Appendix A.

The USACE is presently in the planning phase for the removal of an existing culvert and stream restoration along a section of the Assunpink Creek located in Trenton, NJ (the Site). Previously, O'Brien & Gere conducted a geophysical, geotechnical, and environmental investigation at the Site on behalf of the USACE to support the restoration project. Descriptions of the investigation work and results are presented in O'Brien & Gere's previously-issued reports (*Geotechnical Investigation Report*, O'Brien & Gere, January 2011; *Environmental Investigation Report*, O'Brien & Gere, January 2011).

Based on the results of the prior investigation, additional investigation activities were conducted at the Site to characterize the types of materials present adjacent to the stream culvert and their nature, as described herein.

1.2. Site Description and Geology

1.2.1. Site Description

The Site (as shown on Figure 1) contains a 500-foot (ft) section of the lower Assunpink Creek in downtown Trenton, New Jersey where the creek is contained within a buried box culvert known as the Broad Street Culvert. The investigation area is situated in an open grassy area adjacent to the State of New Jersey Department of Human Services (DHS) building and is bound by East Lafayette Street to the North, South Warren Street to the West, Assunpink Drive to the South, and South Broad Street to the East. The City of Trenton is the owner of the Site property.

1.2.2. Site Geology

According to a map prepared by the New Jersey Geological Survey (NJGS, 2004), surface material at the Site consists of historic fill. Pertinent to this project, concentrations of certain constituents are recognized to be present within historic fill under New Jersey regulation, as described in the *Historic Fill Database Summary Table, Appendix D* of the TRSR (NJAC 7:26E, amended February 22, 2011). Bedrock geology beneath the Site is interpreted to be the Wissahickon Schist Formation, based on outcrops of this formation mapped in Pennsylvania just west of the Site (Socolow and Berg, 1978).

Observations collected during recent installation of five soil borings and four monitoring wells (described herein) indicate that fill is directly underlain by schist bedrock at some locations at the Site. In other areas, a layer primarily consisting of sand and gravel was encountered between the fill material and the bedrock. This sand and gravel layer is interpreted as native overburden material/stream deposits associated with the Assunpink Creek.

1.3. Summary of Existing Site Data

The previous Geophysical, Geotechnical and Environmental Investigation conducted by O'Brien & Gere at the Site in September 2010 under Contract No. W912BU-10-D-0001, Task Order 0005 included collection and laboratory analysis of soil samples from nine test pit locations around the Site. The results of this investigation were summarized in the Geotechnical Investigation Report dated January 2011 and submitted to USACE. These soil sample results indicated that metals and semi-volatile organic compounds (SVOCs) were the most commonly detected constituents in Site soils with results exceeding Project Screening Levels. For this investigation PSLs were developed for soil, groundwater, surface water/weephole and Investigation Derived Waste (IDW) samples. The PSLs are defined in Tables 2-1 through Table 2-4 of the Quality Assurance Project Plan (QAPP).

The Project Screening Levels (PSLs) are summarized below:

- Soil Samples: NJDEP Non-Residential Direct Contact Soil Remediation Standard (N-RDCSRS), Residential Direct Contact Remediation Standard (RDCSRS) and Impact to Groundwater Soil Screening Level (IGW SSL)
- Groundwater Samples: Higher value of the Practical Quantitation Limit (PQL) and the New Jersey Groundwater Quality Criteria (GWQC) and the Trenton Sewer Authority local limits
- Surface Water Samples: New Jersey Fresh Water (FW2) Chronic Aquatic and Human Health criterion
- IDW Samples: Federal hazardous waste classification criteria (Code of Federal Regulations, Chapter 40, Section 261)

The previous environmental investigation report also indicated that the southwest corner of the Site (see Figure 2) exhibited the most evidence of environmental impact, as indicated by quantitative analytical results and visual/olfactory field observations collected from test pits in this area. Visual evidence of petroleum impacted soils was observed in the three test pits (TP-01, TP-02, and TP-03) excavated in this area of the Site.

1.4. Scope of Work

Tasks included in the SOW and Modifications are:

- Install four overburden monitoring wells
- Install five soil borings
- Collect and analyze soil samples from the monitoring well boreholes (pilot borings) and soil borings
- Collect and analyze groundwater samples from the installed monitoring wells
- Survey the newly installed monitoring wells, soil borings, and other Site features

- Install data logging transducers in two of the monitoring wells and collect groundwater elevation data
- Perform slug tests at monitoring wells and evaluate hydraulic conductivity
- Collect and analyze surface water and/or weephole (water) samples
- Provide a New Jersey Licensed Site Remediation Professional (LSRP) to oversee and direct project work
- Measure groundwater levels in off-site wells
- Produce deliverables in accordance with New Jersey Administrative Code (NJAC) 7:26E, the *Technical Requirements for Site Remediation* (TRSR).

1.5. Work Plan Development

A Work Plan was developed to detail the field sampling activities, analytical requirements, and related work required for the soil borings, pilot borings, and well installation. The Work Plan also included similar information related to sampling of groundwater and surface water at the Site, as well as slug testing and groundwater elevation monitoring. The Work Plan was developed in accordance with the New Jersey Field Procedures Manual and was reviewed by a New Jersey LSRP. The Work Plan was submitted to the USACE on April 21, 2011 and approved on April 22, 2011.

The SOW for the soil borings, pilot borings, well installation and other activities described in the Work Plan was based on previous subsurface investigation work conducted by O'Brien & Gere for the USACE at the Site. Based on this work, the USACE anticipated that the borings would be drilled to the top of bedrock, estimated to be about 14 to 20 feet below ground surface (ft bgs) and that the monitoring wells would be also be installed within this depth range.

1.6. Work Plan Modifications and Scope Deviations

Modifications to procedures described in the Work Plan requested and approved by the USACE project manager, and reviewed by a New Jersey LSRP were as follows:

- Monitoring Wells AC-01 through AC-04 were installed as two-inch diameter PVC wells (four-inch diameter PVC wells were specified in the Work Plan). A partial borehole obstruction consisting of one-inch diameter rebar was observed in the AC-01 pilot borehole at approximately eight ft bgs; due to the potential for the rebar to prohibit installation of or de-centralize a four-inch diameter well, a two-inch diameter PVC well was installed in the borehole. For consistency with AC-01, and to reduce the potential for a similar situation to occur in the remainder of the monitoring wells, AC-02 through AC-04 were also installed as two-inch diameter PVC wells.

- Three soil borings (SB-01 through SB-03) were advanced to investigate the subsurface in the vicinity of a filling station formerly located near the southwest corner of the Site. Review of Sanborn maps provided by the USACE indicates that the filling station was operated during the 1950s. The locations of these soil borings locations were selected in the field by the USACE.

- Two additional soil borings (SB-04 and SB-05) were advanced to provide delineation locations in the area of AC-03 (where field observations during well installation indicated potential petroleum product impact). The locations of these soil borings were designated in the field by the USACE.

- A total of 33 primary soil samples were collected from pilot borings for the monitoring wells and soil borings SB-01 through SB-03; the Work Plan specified collection of 35 primary soil samples from these locations (five primary soil samples per location). At AC-01, impacted subsurface material was anticipated (based on observations at a previously-excavated test pit) but not encountered; only three primary soil samples were collected at AC-01 due to concrete and boulders encountered during drilling. At the direction of the USACE, the two remaining "sample slots" from AC-01 were utilized during sample collection at SB-04 and SB-05. At SB-04, six soil samples were collected from six different depth intervals, including one "sample slot" and five primary soil samples. At SB-5, six soil samples including one duplicate sample were collected from five depth intervals including one "sample slot" and five primary soil samples.

- The Work Plan indicated that the sampling designation would include an underscore between the boring/well designation and the sample depth interval. In the field, samples were designated with a dot instead of an underscore between the boring/well designation and the sample depth interval. For example, the designation AC-01.7.0 – 7.5 was used instead of AC-01_70.0-7.5 to indicate a soil sample collected from boring AC-01 from the depth interval of seven to seven and a half ft bgs.

- The Work Plan anticipated that well screen intervals would be installed to extend a minimum of five ft above the water table; since the water table was encountered at relatively shallow depths at AC-02 through AC-04, screen intervals in these wells extended less than five ft above the water table to allow for proper well construction in compliance with New Jersey Department of Environmental Protection (NJDEP) well construction standards. This resulted in changed dimensions for other well construction components (e.g., filter pack, grout, and bentonite seals) as detailed in Section 3 below.

- Due to field conditions, limited sample volume was collected from four of the soil sample intervals. This resulted in laboratory analysis of only a subset of the analyses specified in the Work Plan. The USACE was notified about the limited sample volumes. For these samples, the USACE and O'Brien & Gere discussed which parameters would be prioritized for analysis and which parameters would not be analyzed at each sample location. The following samples were affected:

    - AC-03 (11-11.5 ft bgs); insufficient sample volume for all analyses except extractable petroleum hydrocarbons (EPH)

    - AC-04 (12-12.5 ft bgs); insufficient sample volume for analysis of Target Analyte List (TAL) Metals

    - SB-01 (12-14 ft bgs); insufficient sample volume for analysis of TAL Metals

    - SB-02 (4-6 ft bgs); insufficient sample volume for analysis of TAL Metals

1.7. Report Organization

This report is composed of the following remaining sections:

- Section 2 – Methodology: This section describes the field activities completed under this SOW, as well as the sampling and analysis methodologies used in the field and laboratory.

- Section 3 – Results: This section presents the results of the completed field and laboratory activities discussed in Section 2. Included in this section are tabulated analytical data and presentation of field observations.

- Section 4 – Discussion of Results: This section provides a discussion of the results presented in Section 3.

- Section 5 – Conclusions: This section summarizes the results of the investigation in the context of the overall project objective.

- Section 6 – References: Provides a list of references cited in this report.

2. Methodology

Field work and laboratory activities completed during this investigation were conducted in accordance with the procedures presented in the *Well Installation and Sampling, Assunpink Creek Restoration Project, Trenton, New Jersey, Work Plan* (Work Plan, O'Brien & Gere, April 2011) and the *Assunpink Creek Restoration Project, Trenton, New Jersey, Sampling and Analysis Plan* (SAP, O'Brien & Gere, April 2011). As noted above, these plans were approved by the USACE on April 22, 2011.

2.1. Monitoring Well Installation

Four monitoring wells (designated AC-01 through AC-04) were installed to evaluate groundwater quality, aquifer parameters (hydraulic conductivity), and groundwater elevations in the vicinity of the stream restoration area of the Site. The well locations were selected by the USACE and were surveyed as described in Section 2.5. The surveyed monitoring well locations are shown on Figure 2. Fieldwork for well installation activities was performed between April 27 and May 5, 2011.

A New Jersey-licensed driller (Uni-Tech Drilling Co., Inc. of Franklinville, New Jersey) performed utility clearance, permitting, drilling, construction, and development activities for the monitoring wells, in accordance with NJDEP regulations, as detailed below.

2.1.1. Utility Clearance and Permitting

The driller notified the New Jersey One-Call service for subsurface utility markouts at least three working days before drilling activities started. The purpose of the utility clearance is to identify potential surface and/or subsurface obstructions in the vicinity of the monitoring wells and soil borings. Based on the One-Call markout, review of available utility plans, and review of the subsurface geophysical survey previously conducted at the Site, the final monitoring well locations were selected and marked in the field by the USACE.

The driller submitted monitoring well permit applications to the NJDEP Division of Water Allocation to obtain permits for installation of the monitoring wells. Upon completing well installation activities, a well record and associated documentation was submitted to NJDEP. Copies of this documentation are presented in Appendix B.

2.1.2. Pilot Borings

Prior to well installation, a pilot boring was advanced at each well location to establish stratigraphy, collect soil samples, and locate the monitoring well screen interval. These borings were advanced using hollow-stem auger (HSA) drilling and were drilled and sampled continuously with the split-spoon sampling technique from the ground surface. Air rotary drilling was utilized from 12.1 to 14 ft bgs ft bgs at the AC-01 location to drill through a concrete obstruction. It was this concrete obstruction which contained the rebar noted above. A soil sample was collected using a split spoon from 14 to 14.5 ft bgs. Air rotary drilling was continued from 14 to 18 ft bgs due to the presence of concrete and boulders in the fill.

Drilling and sampling equipment was decontaminated according to the procedures detailed in the Work Plan. Decontamination fluids and soil cuttings generated during drilling activities were containerized in 55-gallon steel drums and staged near the wells. Fluids and solids were containerized separately for later characterization.

Drilling activities were supervised and documented by an O'Brien & Gere geologist, according to the relevant standard operating procedures (SOPs) in the Work Plan. Drilling and sampling activities were performed in accordance with the NJDEP Field Sampling Procedures Manual.

Soil samples collected during pilot boring installation were classified in accordance with the Unified Soil Classification System (American Society for Testing and Materials [ASTM] D2487). Descriptive information for soils was in accordance with ASTM D2488 and included information about moisture conditions, consistency, degree of compactness or stiffness, color, primary constituent and gradation, secondary constituents, and odor (where applicable). Indication of penetration resistance was also recorded during pilot boring installation, using the Standard Penetration Test (SPT). Prior to classification, soil samples were split open lengthwise and screened along their entire length with a photoionization detector (PID) to evaluate the presence of volatile organic compounds (VOCs). Soil descriptions, SPT measurements, and PID readings are recorded on Pilot Boring Logs included in Appendix C.

During drilling, five soil samples were collected from each pilot boring for laboratory analysis (three samples were collected at the AC-01 pilot boring, as described above). For each boring, a sample was collected above the saturated zone, within the upper portion of the saturated zone, near the termination depth of the boring, and at two other field selected depths within the boring. If field observations (including PID screening and visual/olfactory observations) indicated the presence of impacted material, samples were collected at these depths. The field selected sample intervals were agreed upon in the field by the O'Brien & Gere geologist and the USACE project manager, following review/discussion of field observations. Soil sample depths are indicated on Sample Tracking Forms included in Appendix D.

Soil samples were collected, maintained under chain of custody, and stored according to procedures detailed in the Work Plan. The collected soil samples were analyzed by a NJDEP-certified laboratory (Accutest Laboratories of Dayton, New Jersey, except dioxin analyses were performed by Cape Fear Analytical, Wilmington, North Carolina) for the following parameters, using methods outlined in Table 2 of the Field Sampling Plan (FSP) and as listed below:

- Target Compound List (TCL) VOCs + 10 Tentatively Identified Compounds (TICs) – SW846 8260B
- TCL SVOCs + 10 TICs - SW 846 8270C
- TAL Metals (including mercury) – SW 846 6010B (7470A/7471A)
- TCL Polychlorinated Biphenyls (PCB) - SW 846 8082
- TCL Pesticides, Chlorinated – SW 846 8081A
- TCL Herbicides, Chlorinated – SW 846 8151
- Oil and Grease – SW 846 1664A
- EPH – NJDEP EPH Method Rev. 3

Soil samples for VOC analysis were collected from a specific depth as grab samples using Encore containers; samples for other analyses were collected from an approximate six-inch interval and were composited in a stainless steel bowl before transfer to laboratory-provided containers. At sample

depths where the recovery was poor, the sample interval was extended up to a maximum of two feet to obtain the necessary soil volume before compositing and sampling for other analysis. At four sample depths, poor sample recovery prevented the collection of all parameters for analysis, as noted in Section 1.6 above.

Subsurface soil samples not used for analytical testing were placed in one-pint, wide-mouth glass jars and stored in corrugated cardboard boxes. Each jar sample was labeled in accordance with requirements detailed in the Work Plan. Jar samples will be delivered to the Fort Mifflin Project Engineers Office, Philadelphia, PA, if requested by the USACE.

2.1.3. Well Construction

Following pilot boring completion, boreholes were reamed to a diameter of eight and a half inches using HSA drilling to accommodate two-inch diameter PVC well materials. Prior to well installation, the total depth of the borehole was gauged with a measuring tape by the O'Brien & Gere geologist to confirm drilling accuracy.

Each well was constructed with two-inch diameter, Schedule 40 PVC with flush-joint threaded riser casing and 0.010-inch slot PVC well screen (10 slot screen), with a short section of sump below the screen. No glue or solvents were used to join sections of screen or riser casing. A primary sand pack consisting of Morie #0 sand was placed in the borehole around the well screen and sump from the bottom of the borehole to a depth of two ft above the top of the well screen, except at AC-02, AC-03 and AC-04 where the sand pack extended 0.5 ft above the top of the well screen due to the shallowness of these wells. A secondary sand pack, consisting of Morie #00 sand, was emplaced directly above the primary filter pack, followed by a bentonite seal. The remaining borehole annulus around the well was filled with a grout/bentonite (95%/5%) mixture mixed with potable water. Well construction details are presented in Table 1.

At AC-02 and AC-04, prior to placement of screen and primary sand pack, #00 sand was used to backfill the bottom portion of the pilot borings not utilized for well construction. A tape measure was used to verify and document the final dimensions (top and bottom) and thickness of all sand, grout, and other materials added during the construction of the well. All well-construction materials were added to the borehole within the augers, and the augers were removed at the appropriate rate as materials were added.

Expandable, locking well caps were installed in the PVC well casings and three of the wells (AC-02, AC-03 and AC-04) were fitted with a protective steel outer casing with a locking lid. The outer casing was set in a minimum four-inch thick concrete pad, measuring three ft square. AC-01 was finished as a flush mounted, eight-inch diameter steel manhole, set in a four-inch thick concrete pad, measuring three ft square.

2.1.4. Well Development

Following installation, each well was developed in accordance with ASTM D5521-94 (*Standard Guide for Development of Ground-Water Monitoring Wells in Granular Aquifers)* which is referenced by the Work Plan. Well development was accomplished through alternating pumping and surging using a nominal two-inch diameter submersible pump and surge block, respectively. Well development fluids were containerized in 55-gallon steel drums and staged near the wells.

A turbidimeter (Lamotte 2020) and water-quality meter (Horiba U-52) were used to measure field parameters and evaluate the progress of well development; prior to use, these instruments were calibrated in accordance with the Work Plan. Well development information was recorded on well development logs, presented in Appendix C. The instrument calibration records are included in Appendix D.

2.2. Soil Borings

Five soil borings (designated SB-01 through SB-05) were installed during the investigation to provide soil quality data at selected areas of the Site. The soil boring locations were selected by the USACE and are shown on Figure 2. Fieldwork for soil boring activities was performed between April 25 and May 5, 2011.

The soil borings were advanced by a New Jersey-licensed driller (Uni-Tech Drilling Co., Inc. of Franklinville, New Jersey), in accordance with NJDEP regulations, as detailed below. Permits were not required for the soil borings because they were less than 25 ft deep.

The driller notified the New Jersey One-Call service for subsurface utility markouts at least three working days before starting the drilling activities. Based on the One-Call markout, review of available utility plans and review of the subsurface geophysical survey previously conducted at the Site, the final soil boring locations were selected and marked in the field by the USACE.

Prior to initiating drilling at SB-01, SB-02, and SB-03, which were located in an area formerly occupied by a filling station (as described above) and in an area with several documented subsurface utilities, the driller completed a "soft dig" at these locations to evaluate the presence of potential obstructions. The soft dig apparatus excavates a small portion of the subsurface – approximately one ft in diameter – to approximately four ft bgs using a combination air lance/vacuum. No subsurface utilities were identified as a result of this precautionary work. However, at soil boring SB-03, a concrete obstruction (thrust block) was encountered at a relatively shallow depth and the boring location was moved approximately five ft east.

Following completion of soft digging activities, SB-01, SB-02, and SB-03 were advanced using HSA drilling combined with the split-spoon sampling technique and were drilled and sampled continuously from the bottom of the soft dig excavation. Soils from the sidewall of the soft dig excavation were classified as described above in Section 2.1.2 and scanned with the PID. Soil descriptions and PID measurements were recorded on Soil Boring Logs included in Appendix C. Soft digging was not conducted at SB-04 and SB-05; these borings were drilled and sampled continuously from ground surface using HSA drilling and split-spoon sampling.

Drilling and sampling equipment was decontaminated according to the procedures detailed in the Work Plan. Decontamination fluids and soil cuttings generated during drilling and soft digging activities were containerized in 55-gallon steel drums and staged near the borings for later characterization, as described in Section 2.1.

Soil boring activities were supervised and documented by an O'Brien & Gere geologist, according to the SOPs contained in the Work Plan. Previously a geophysical, geotechnical and environmental investigation was conducted by O'Brien & Gere on September 16 and 17, 2010 and included the completion of nine test pits at USACE selected locations. These test pits extended from the ground surface to depths ranging from 9 to 17 ft bgs and provided characterization of the shallow overburden material. This additional investigation was conducted to characterize the types of materials present in the deep overburden adjacent to the stream culvert and their nature. Drilling and sampling activities were performed in accordance with the NJDEP Field Sampling Procedures Manual requirements. Soil samples were screened and classified similar to pilot boring soil samples (see Section 2.1.2).

During drilling, five soil samples were collected from each soil boring for laboratory analysis. For each boring, a sample was collected above the saturated zone, within the upper portion of the saturated zone, near the termination depth of the boring, and at two field selected depths within the boring. If field observations (including PID screening and visual and olfactory observations) indicated the presence of impacted material, samples were collected at these depths. The field selected sample intervals were agreed upon in the field by the O'Brien & Gere geologist and the USACE project manager, following review/discussion of field observations. Soil sample depths are indicated on the Sample Tracking Forms included in Appendix D.

Soil samples were collected, maintained, and analyzed in the same manner as described above for pilot borings (see Section 2.1.2). Samples were also designated as described above for pilot borings, except the first two characters in soil boring designations were "SB" instead of "AC". For example, the designation SB-01.5.0 – 5.5 indicates a soil sample collected from boring SB-01 from the depth interval of five to five and a half ft bgs.

2.3. Monitoring Well Slug Testing

On May 9, 2011, slug tests were performed in each of the installed monitoring wells to estimate the hydraulic conductivity of the overburden aquifer. Slug testing procedures were conducted in accordance with SOP 011 of the Work Plan.

Prior to each slug test, the water level in the well was measured, recorded, and used as the input value for the initial (static) water level. A transducer was then installed in the well near the bottom of the screened interval. The transducer was programmed to collect water-level data on a logarithmic scale. Next, a weighted, three ft long, solid PVC cylinder ("slug") was lowered into the well below the static water level; following equilibration of the water level in the well to the static level, transducer data collection was initiated and the slug was rapidly withdrawn from the water column (a "slug-out" test). The time the slug was removed from the water column was assigned time zero (t_0); subsequent depths to water were measured to the nearest 0.01 ft electronically by the transducer at specified time intervals, using a logarithmic time scale.

Water-level recovery in the well was measured until a minimum of 90% of the static water level was achieved. Following recovery, data collection was stopped and the process was repeated. Three slug tests were conducted at each of the four monitoring wells to check the consistency of the test results and allow the calculation of an average hydraulic conductivity value. The slug and transducer equipment were decontaminated between each well according to the procedures presented in SOP 017 of the Work Plan. Decontamination fluids were added to drums containing well development fluids.

2.4. Groundwater Elevation Monitoring

2.4.1. Automated Data Logging

Following completion of slug testing, electronic data-logging pressure transducers were installed in AC-02 and AC-04 to monitor groundwater levels in these wells for a period of 30 days. These two wells were selected by the USACE to provide water-level monitoring points on the north and south sides of Assunpink Creek. The transducers were installed on May 9, 2011 and removed on June 8, 2011; during this period, the transducers collected water-level measurements at ten-minute intervals. Precipitation and barometric pressure data for this time period were also obtained from a New Jersey Weather & Climate Network Automated Surface Observing System (ASOS) located at the Mercer County Airport near Trenton, NJ.

Following removal of the transducers, the equipment was decontaminated according to the procedures presented in SOP 017 of the Work Plan. Decontamination fluids were added to drums containing well development fluids.

2.4.2. Manual Measurements

The depth to groundwater was measured in the four Site wells on May 23, 2011, immediately prior to groundwater sampling activities (discussed below). A second round of groundwater level measurements was collected immediately prior to transducer removal on June 8, 2011. Groundwater levels were measured with an interface meter and recorded to the nearest 0.01 ft. The potential presence of free product in each well was also evaluated using the interface meter. No free product was measured or observed in the four Site monitoring wells.

On June 8, 2011 groundwater levels were also measured in two monitoring wells (MW-2 and MW-5) at an adjacent co-generation facility operated by Veolia. The approximate locations of these two wells are shown on Figure 2. Boring logs for these wells, provided by Veolia's consultant, are included in Appendix E. Water levels and the potential presence of free product were measured by Veolia's consultant, who provided these data during their groundwater monitoring activities at the co-generation facility, which is located south of the Site across Assunpink Drive.

Following groundwater level measurements, the elevations of surface water in Assunpink Creek were measured at the upstream and downstream survey points installed on May 23, 2011, as discussed in Section 2.5, below. The survey points are shown on Figures 2 and 3. Surface water levels were measured to the nearest 0.01 ft using an interface meter.

2.5. Surveying

Surveying activities were conducted by a New Jersey-Licensed Surveyor (Vargo and Associates of Franklinville, New Jersey) on May 23, 2011 under the supervision of an O'Brien & Gere geologist. The four Site monitoring wells and five soil boring locations were surveyed to determine their horizontal locations and vertical elevations. The survey was performed in NJ State Plane Coordinate System NAD83, New Jersey (US Survey ft) and NAVD 88 (US Survey ft). Horizontal locations were surveyed to the nearest 0.1 ft and vertical (elevation) measurements were recorded to the nearest 0.01 ft.

Three elevation points were surveyed at each monitoring well; top of inner (PVC) casing, top of outer protective steel casing, and vicinity ground surface. At AC-01, the top of the flush mount lid was surveyed (this well is not constructed with an outer steel casing, as described in Section 2.1.3).

At the eastern (upstream) side of the Site, the location and elevation of the endmost weephole in the northern side of the existing vertical culvert walls was surveyed. Two additional weepholes were surveyed, both on the north side of the culvert; one within the collapsed roof section of the culvert and the other on the east side of the South Warren Street Bridge. The weepholes were surveyed from above, since access from within the stream culvert was not possible. Because of this constraint, the accuracy of the weephole elevations is ± 0.3 ft.

The surveyor also placed PK nails on the culvert wall at both the upstream (SW-01) and downstream (SW-02) ends of the culvert and surveyed these permanent reference marks to serve as reference points for measurements of surface water elevations. The marks placed on the culvert were surveyed using the same standards and accuracies as described above for the monitoring wells/soil borings.

Locations of surveyed monitoring wells, soil borings, and other features are shown on Figure 2.

2.6. Groundwater Sampling

Groundwater samples were collected from the four Site monitoring wells on May 23, 2011, at least two weeks after development. Groundwater samples were collected according to the Low Stress (Low Flow) Procedures presented in SOP 015 of the Work Plan. A two-inch diameter, variable-speed submersible pump fitted with Teflon-lined sample tubing was used for well purging and sample collection, in combination with a Horiba U-22 continuous flow-through cell to measure water-quality parameters during purging.

The depth to water in each sampled well was monitored to observe drawdown during purging; the following field parameters were monitored using the Horiba U-22 to evaluate stabilization of these parameters prior to sampling:

- specific conductance
- pH
- temperature
- oxidation-reduction potential (ORP)
- dissolved oxygen (DO)

Groundwater turbidity was monitored using a separate field turbidimeter specifically designed to measure turbidity only (Lamotte 2020). Measurements with the turbidimeter were collected downstream of the flow-through cell by collecting purge water in the plastic tube provided with the turbidimeter. The turbidimeter and Horiba U-22 were calibrated according to the procedures detailed in SOP 016 of the Work Plan. Records of calibration are included in Appendix D of this report. Documentation of field parameters and depth to water measurements collected during purging were recorded on Groundwater Sampling Logs (included in Appendix C).

Field parameters were measured at five-minute intervals until three consecutive readings exhibited parameter stabilization, based on the following criteria:

- ± 0.1 standard units (su) for pH
- ± 3% (milliSiemens per centimeter, mS/cm) for specific conductance
- ± 10 millivolts (mV) for ORP
- ± 10 % (milligrams per liter, mg/L) for dissolved oxygen
- ± 10 % (nephelometric turbidity units, NTU) for turbidity

Following stabilization of groundwater parameters, the tubing was disconnected from the flow-through cell and a groundwater sample was collected directly from the tubing into laboratory-supplied sample containers. Samples were maintained under the chain-of-custody and storage procedures detailed in the Work Plan. Groundwater samples were analyzed by a NJDEP-certified laboratory for the following parameters, using methods summarized in Table 2 of the FSP and as listed below:

- TCL VOCs + 10 TICs -- SW 846 8260B
- TCL SVOCs + 10 TICs - SW 846 8270C
- TAL Metals (including mercury) - SW 846 6010B (7470A/7471A)
- TCL Pesticides, Chlorinated - SW 846 8081A
- TCL Herbicides, Chlorinated - SW 846 8151
- TCL PCBs - SW 846 8082
- Oil and Grease – SW 846 1664A
- 2,3,7,8-Tetrachloro-p-dioxin (TCDD) – SW846 1613B
- Total Suspended Solids (TSS) – SM20 2540D
- Biochemical Oxygen Demand (BOD) – SM20 5210B
- pH (field purge data)

Sampling equipment, including pumps and flow-through measurement cells, were decontaminated prior to use at each sample location according to the procedures described in SOP 017 of the Work Plan. Decontamination fluids and purge fluids were containerized in 55-gallon steel drums staged near the wells.

2.7. Surface Water Sampling

During the groundwater sampling event on May 23, 2011, surface water samples were collected from two locations in Assunpink Creek, according to procedures presented in SOP 018 of the Work Plan. Sample SW-01 was collected below the stream culvert roof, upstream of the Site under the South Broad Street overpass; sample SW-02 was collected downstream of the Site below the Warren Street bridge. Locations from which these samples were collected were near the surveyed PK nail locations. The samples were collected from the center of the stream channel by lowering a remotely-triggered sampling device (Kemmerer sampler) to a point approximately midway in the water column of the stream. Following retrieval of the Kemmerer sampling device, the water was transferred to laboratory-supplied sample bottles.

The sampler was decontaminated prior to use at each sample location according to procedures in SOP 017 of the Work Plan. Decontamination fluids were added to the 55 gallon drums containing groundwater sampling fluids.

2.8. Investigation Derived Waste Sampling

Samples of investigation derived waste (IDW) were collected on May 23, 2011. Two IDW samples were collected: a solids sample consisting of drill cuttings and an aqueous sample consisting of well development fluids, groundwater sampling fluids, and decontamination fluids.

The solid IDW sample was collected by compositing material from each IDW solids drum in a stainless steel bowl before transfer to sample containers. The sample collected for VOC analysis was collected as a grab sample from a drum containing AC-03 drill cuttings (i.e., the sample was not composited). AC-03 drill cuttings were selected for VOC sampling, since field observations indicated drill cuttings were more impacted at this location than at other drilling locations. The solid IDW sample was analyzed via the Toxicity Characteristic Leaching Procedure (TCLP) and hazard characteristics for the following parameters, using methods summarized in Table 2 of the FSP and as listed below:

- TCLP VOCs - SW 846 8260B
- TCLP SVOCs - SW 846 8270C
- TCLP metals (including mercury) - SW 846 6010B (7470A/7471A)
- TCLP Pesticides - SW 846 8081A
- TCLP Herbicides - SW 846 8151
- Ignitability (Solids) - SW 846 Chapter 7/ASTM D93
- Ignitability (Aqueous) - SW 846 1010A 7/ASTM D93
- Reactivity, Sulfide - SW 846 Ch 7/9034
- Reactivity, Cyanide - SW 846 Ch 7/9012B
- Corrosivity - SW 846 Chapter 7

The aqueous IDW sample was collected by compositing material from each IDW liquid drum directly into the sample containers. The sample collected for VOC analysis was collected as a grab sample from a drum containing AC-03 purge fluids (the sample collected for VOC analysis was not composited). AC-03 purge fluids were selected for VOC sampling, since field observations indicated purge fluids were more impacted at this location than at other groundwater sampling locations. The aqueous IDW sample was analyzed for the same parameters as the solid IDW sample (except for TCLP preparation and extraction).

3. Results

3.1. Monitoring Well Installation

3.1.1. Utility Clearance and Permitting

A review of utility plans and the geophysical survey report for the Site indicated subsurface utilities are present in the investigation area. Prior to drilling, the One-Call markout was completed at the Site, and the results of the markout were compared to utility plans and the geophysical survey in the field by O'Brien & Gere and the USACE. Based on a collective review of the information, final drilling locations were selected in the field by the USACE as shown on Figure 2.

Monitoring well permits were obtained for each of the four wells and are presented in Appendix B. Also included in Appendix B are Monitoring Well Records and other required documentation (e.g., Form A) for each well.

3.1.2. Pilot Borings

Pilot boring information (presented on boring logs in Appendix C and related documentation in Appendix D) is summarized in Table 1.

Pilot borings (except AC-02) were advanced to a maximum depth of 20 ft bgs or shallower depth where bedrock was encountered (AC-03 and AC-04). Most of the subsurface penetrated by each pilot boring consisted of fill material composed mainly of silty sand with gravel, with variable amounts of cobbles, boulders, concrete, asphalt, wood, brick, and glass fragments. Native overburden material, primarily consisting of sand and gravel, was encountered beneath the fill material at the AC-02 and AC-04 locations. Bedrock (schist) was encountered at AC-03 directly beneath the fill material and at AC-04 beneath the native overburden material. The upper portion of the bedrock was observed to be slightly to severely weathered. Bedrock was not encountered in borings at AC-01 (20 ft bgs) and AC-02 (18 ft bgs). Due to the potential for drill rig destabilization if additional augering was conducted (the drill rig was positioned on a slope), the AC-02 pilot boring was terminated at 18 ft bgs, above bedrock. The USACE approved termination of boring AC-02 at this depth.

Field observations (including PID screening and visual and olfactory observations) collected during pilot borehole drilling indicated the presence of impacted material at some of the pilot boring locations, as summarized below:

<u>AC-01</u>

- Fill material from 14-14.4 ft bgs: petroleum odor and sheen, maximum PID reading, 3.9 parts per million (ppm)
- Fill material from 18-20 ft bgs: petroleum odor and sheen, maximum PID reading, 2.3 ppm. Note: this borehole was not sampled from 14.4-18 ft bgs because air rotary drilling was used to drill through a concrete obstruction

AC-03

- Fill material from 8-9 ft bgs: slight petroleum odor, maximum PID reading, 12.1 ppm
- Fill material from 9-11 ft bgs: strong petroleum odor, black oily coating, maximum PID reading, 159 ppm
- Weathered schist from 11-11.25 ft bgs: slight petroleum odor, maximum PID reading, 1.7 ppm

AC-04

- Fill material from 2.5-3 ft bgs: slight chemical odor; maximum PID reading, 12.1 ppm

These field observations are discussed in the context of soil analytical results in Section 4 (below).

3.1.3. Well Construction

As discussed in Section 2.1.3, two-inch diameter PVC wells were installed after completion of the pilot boring activities. Well construction details, including construction materials, are presented in Table 1. Final well depths, screen lengths, well materials and well material placement depths were approved in the field by the USACE.

The final well screen placements were designed to monitor overburden groundwater levels that will vary from those encountered during drilling due to precipitation events, seasonal variability, and related factors. Based on the nature of the subsurface material encountered at the drilling locations, including the presence of silt, 10-slot screen and a #0 primary sand/filter pack were used for well construction to promote the hydrogeologic connection with the overburden groundwater zone and the successful collection of satisfactory groundwater samples.

3.1.4. Well Development

Development of the four monitoring wells (AC-01 through AC-04) was conducted on May 4 and 5, 2011. Well development logs are presented in Appendix C and related field documentation is included in Appendix D. Each monitoring well was developed for a period of four hours. As detailed in the Work Plan, a turbidity reading less than or equal to 40 NTU was targeted during development. However, after four hours of development, the turbidity readings in each well were higher than the targeted value. In accordance with the Work Plan, the USACE was notified that wells did not meet the targeted turbidity level. The USACE directed O'Brien & Gere to discontinue well development after the four-hour maximum development time had elapsed. Final turbidity readings were as follows:

- AC-01: 166 NTU
- AC-02: 800 NTU
- AC-03: 650 NTU
- AC-04: 211 NTU

Although the target turbidity readings were not achieved during well development, turbidity readings of less than 40 NTU were later measured in purge water from each well prior to collection of groundwater samples (see Section 3.7 below).

3.2. Soil Borings

Soil boring logs are presented in Appendix C and related field documentation is included in Appendix D. The logs and field documentation include information as required by the Work Plan, similar to pilot boring documentation described above. A summary of soil boring information (including total depths) is included in Table 1. Soil borings were advanced to a maximum depth of 20 ft bgs or to a shallower depth if bedrock was encountered.

As indicated on the logs, soil borings encountered similar material to the pilot borings, although native overburden material was not encountered in the soil borings. Bedrock, consisting of schist, was encountered beneath fill material at SB-01, -03, -04, and -05. The upper portion of the bedrock was observed to be slightly to severely weathered. Bedrock was not encountered in SB-02 (completed to 20 ft bgs).

Impacted material (based on field screening) was not observed at soil boring locations, except as follows at SB-01:

<u>SB-01</u>

- Fill material from 12-16 ft bgs: petroleum odor, maximum PID reading, 3.3 ppm
- Fill material from 16-17 ft bgs: creosote odor, maximum PID reading, 1.1 ppm
- Fill material from 17-19.5 ft bgs: creosote odor, PID reading, 0.0 ppm

SB-01 field observations are discussed in the context of soil boring analytical results in Section 4 (below).

3.3. Soil Samples

The soil analytical methods and quality-control (QC) samples are presented in Table 2-1. The analytical results for soil samples collected from pilot/soil borings are presented in Tables 2-2 through 2-6. These results were compared to PSLs, which include NJDEP Non-Residential Direct Contact Soil Remediation Standards (N-RDCSRS), Residential Direct Contact Soil Remediation Standards (RDCSRS), and the NJDEP Impact to Groundwater Soil Screening Levels (IGW SSL). A summary of the exceedances for the soil analytical results is presented in Table 2-7.

<u>VOC Results</u>

VOC soil sample analytical results (Table 2-2) indicate that no sample results exceeded the N-RDCSRS or the RDCSRS. Results from three samples collected from AC-03 exceeded the IGW SSL for benzene of 0.005 milligram/kilogram (mg/kg) as follows:

- AC-03 (9 ft bgs), 0.0942 mg/kg
- AC-03 (10.5 ft bgs), 0.0445 mg/kg (estimated concentration)
- AC-03 (11.2 ft bgs), 0.0457 mg/kg (estimated concentration)

TICs were detected in ten samples analyzed for VOCs (including one duplicate). The laboratory reported these TICs, which are organic compounds related to the target analytes but not included on the method analyte list, as total values. The direct contact human health criterion established by the NJDEP for organic compounds is 1,000 mg/kg. The totals for the VOC TICs in the ten samples ranged from 0.057 mg/kg to 175 mg/kg and were as follows:

- AC-01 (14 ft bgs), 13.5 mg/kg
- AC-01 (20 ft bgs), 0.0803 mg/kg
- AC-03 (7.5 ft bgs), 0.057 mg/kg
- AC-03 (9 ft bgs), 171 mg/kg
- AC-03 (10.5 ft bgs), 175 mg/kg
- AC-03 (11.2 ft bgs), 65 mg/kg
- AC-04 (2.5 ft bgs), 0.636 mg/kg and duplicate sample, 0.448 mg/kg
- SB-01 (14 ft bgs), 0.626 mg/kg
- SB-03 (19 ft bgs), 0.0669 mg/kg

The total VOC TIC concentrations in soil are less than the direct contact human health criterion for organic compounds.

SVOC Results

SVOC soil sample analytical results (Table 2-3) indicate that the following sample results exceeded N-RDCSRS for the indicated compounds:

- Benzo(a)anthracene:
    - SB-01 (11.5 -12 ft bgs) and (14-16 ft bgs)
    - SB-02 (11-11.5 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Benzo(a)pyrene:
    - SB-01 (5-5.5 ft bgs), (11.5 -12 ft bgs), (12-14 ft bgs), and SB-01 (14-16 ft bgs)
    - SB-02 (4-6 ft bgs), (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (5.5-6 ft bgs), (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs)
    - SB-05 (5-5.5), (7.5-8 ft bgs), and (8.5-9 ft bgs)
    - AC-01 (7.5-8 ft bgs), (14-14.5 ft bgs), and (18-20 ft bgs)
    - AC-02 (6-8 ft bgs), (8.5-9 ft bgs), (12-12.5), and (17.5-18 ft bgs and duplicate)
    - AC-03 (5.5-6 ft bgs), (9-9.5 ft bgs), and (10-11 ft bgs and duplicate)

- Benzo(b)fluoranthene:
    - SB-01 (14-16 ft bgs)
    - SB-02 (11-11.5 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Dibenzo(a,h)anthracene:
    - SB-01 (5-5.5 ft bgs), (11.5-12 ft bgs), and (14-16 ft bgs)
    - SB-02 (11-11.5 ft bgs), (12-14), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs)
    - AC-01 (7.5-8 ft bgs)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Indeno(1,2,3-cd)pyrene:
    - SB-02 (11-11.5 ft bgs) and (19.5-20 ft bgs)

The following SVOC sample results exceeded the RDCSRS for the indicated compounds:

- Benzo(a)anthracene:
    - SB-01 (5-5.5 ft bgs), (11.5 -12 ft bgs), (12-14 ft bgs), and (14-16 ft bgs)
    - SB-02 (4-6 ft bgs), (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (5.5-6 ft bgs), (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs)
    - AC-01 (7.5-8 ft bgs) and (14-14.5),
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Benzo(a)pyrene:
    - SB-01 (5-5.5 ft bgs), (11.5 -12 ft bgs), (12-14 ft bgs), and (14-16 ft bgs)
    - SB-02 (4-6 ft bgs), (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs),
    - SB-04 (5.5-6 ft bgs), (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs)
    - SB-05 (5-5.5), (7.5-8 ft bgs), and (8.5-9 ft bgs)
    - AC-01 (7.5-8 ft bgs), (14-14.5 ft bgs), and (18-20 ft bgs)
    - AC-02 (6-8 ft bgs), (8.5-9 ft bgs), (12-12.5), (17.5-18 ft bgs and duplicate)
    - AC-03 (5.5-6 ft bgs), (9-9.5 ft bgs), and (10-11 ft bgs and duplicate)

- Benzo(b)fluoranthene:
    - SB-01 (5-5.5 ft bgs), (11.5-12 ft bgs), (12-14 ft bgs), (14-16 ft bgs)
    - SB-02 (4-6 ft bgs), (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs), SB-04 (8.5-9 ft bgs), SB-04 (13.5-14 ft bgs)
    - AC-01 (7.5-8 ft bgs) and (14-14.5 ft bgs)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Benzo(k) fluoranthene:
    - SB-02 (11-11.5 ft bgs) and (19.5-20 ft bgs)

- Dibenzo(a,h)anthracene:
    - SB-01 (5-5.5 ft bgs), (11.5-12 ft bgs), and (14-16 ft bgs),
    - SB-02 (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs)
    - AC-01 (7.5-8 ft bgs)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Indeno(1,2,3-cd)pyrene:
    - SB-01 (11.5-12 ft bgs), (14-16 ft bgs)
    - SB-02 (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs) and (13.5-14 ft bgs)
    - AC-01 (7.5-8 ft bgs),
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Naphthalene:
    - SB-02 (19.5-20 ft bgs)

The following SVOC sample results exceeded the IGW SSL for the indicated compounds:

- Benzo(a)anthracene:
    - SB-01 (5-5.5 ft bgs), (11.5 -12 ft bgs), (12-14 ft bgs), and (14-16 ft bgs)
    - SB-02 (4-6 ft bgs), (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (5.5-6 ft bgs), (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs),
    - AC-01 (7.5-8 ft bgs) and (14-14.5)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Benzo(a)pyrene:
    - SB-01 (5-5.5 ft bgs), (11.5 -12 ft bgs), (12-14 ft bgs), and (14-16 ft bgs)
    - SB-02 (4-6 ft bgs), (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (5.5-6 ft bgs), (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14)
    - SB-05 (5-5.5), (7.5-8 ft bgs), and (8.5-9 ft bgs)
    - AC-01 (7.5-8 ft bgs), (14-14.5 ft bgs), and (18-20 ft bgs)
    - AC-02 (6-8 ft bgs), (8.5-9 ft bgs), (12-12.5), (17.5-18 ft bgs and duplicate)
    - AC-03 (5.5-6 ft bgs), (9-9.5 ft bgs) and (10-11 ft bgs and duplicate)

- Benzo(b)fluoranthene:
    - SB-01 (14-16 ft bgs)
    - SB-02 (11-11.5 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Dibenzo(a,h)anthracene:
    - SB-01 (11.5-12 ft bgs) and (14-16 ft bgs)
    - SB-02 (11-11.5 ft bgs) and (19.5-20 ft bgs)
    - SB-04 (7.5-8 ft bgs)
    - AC-02 (6-8 ft bgs) and (8.5-9 ft bgs)

- Indeno(1,2,3-cd)pyrene:
    - SB-02 (11-11.5 ft bgs) and (19.5-20 ft bgs)

SVOC TICs were detected in 41 of the 47 soil samples. Total SVOC TIC concentrations in these samples ranged from 0.15 mg/kg at SB-03 (5.5-6 ft bgs) to 43.33 mg/kg at AC-01 (14-14.5 ft bgs). The direct contact human health criterion established by the NJDEP for organic compounds is 1,000 mg/kg. The total SVOC TIC concentrations in soil are less than the direct contact human health criterion for organic compounds.

Pesticide and Herbicides Results

Pesticide and herbicide soil sample analytical results (Table 2-4) indicate that only the sample result for dieldrin from SB-04 (13.5-14 ft bgs) at 0.0053 mg/kg exceeded the IGW SSL of 0.003 mg/kg. No soil sample results exceeded the corresponding RDCSRS or N-RDCSRS for pesticides or herbicides.

PCB Results

PCB soil sample analytical results (see Table 2-4) show that the following sample results exceeded the N-RDCSRS of 1 mg/kg for the indicated compounds:

- Aroclor 1254: SB-02 (14-16 ft bgs), 1.46 mg/kg
- Aroclor 1260: SB-04 (7.5-8 ft bgs), 5.67 mg/kg

The following sample results exceeded the RDCSRS and IGW SSL (both 0.2 mg/kg) for the indicated compounds:

- Aroclor 1254: SB-02 (14-16 ft bgs), 1.46 mg/kg, and (19.5-20 ft bgs), 0.653 mg/kg
- Aroclor 1260: SB-02 (19.5-20 ft bgs), 0.211 mg/kg, and SB-04 (7.5-8 ft bgs), 5.67 mg/kg

Oil and Grease Results

Oil and grease analysis results are included in Table 2-5. Of the 47 samples analyzed for oil and grease, 40 samples had detectable concentrations ranging from 133 mg/kg at SB-03 (16-18 ft bgs) to 9,730 mg/kg at SB-02 (4-6 ft bgs). A regulatory standard for oil and grease in soil has not been established by the NJDEP.

EPH Results

EPH analysis results are included in Table 2-5. EPH concentrations were detected in 33 of the 47 soil samples ranging from 27.2 mg/kg at SB-04 (8.5-9 ft bgs) to 1,090 mg/kg at SB-02 (19.5-20 ft bgs). Fractionated EPH results are also presented in Table 2-5. EPH results were fractionated into two carbon ranges; aromatics and aliphatics, and the sum of these fractions composes the EPH result.

Specific direct contact and IGW standards have not been established by NJDEP for EPH in soil and are calculated on a site-specific basis, if necessary, based on EPH results as follows; where the detected EPH consists of unknown petroleum hydrocarbons (as opposed to diesel or No. 2 fuel oil), site-specific soil remediation criterion are established based on fractionated EPH results, when (total) EPH results exceed 1,700 mg/kg. It was not necessary to calculate site-specific soil remediation criteria, since the EPH concentrations in soil samples, ranging from non-detect (about 5 mg/kg) to 1,090 mg/kg, did not exceed 1,700 mg/kg.

Metals Results

Soil sample analytical results for metals (Table 2-6) indicate that the following sample results exceeded the N-RDCSRS for lead (800 mg/kg):

- SB-01 (14-16 ft bgs), 981 mg/kg
- SB-02 (14-16 ft bgs), 5,200 mg/kg and (19.5-20 ft bgs), 6,860 mg/kg
- AC-01 (14-14.5 ft bgs), 1,200 mg/kg and (18-20 ft bgs), 817 mg/kg

As indicated in the table, the following sample soil results exceeded the RDCSRS for the indicated constituents:

- Antimony:
  - SB-01 (19.2-19.7 ft bgs)

- Lead:
  - SB-01 (5-5.5 ft bgs), (14-16 ft bgs), (19.2-19.7 ft bgs)
  - SB-02 (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
  - AC-01 (7.5-8 ft bgs), (14-14.5 ft bgs) and (18-20 ft bgs)

- Thallium:
  - SB-03 (16-18 ft bgs)

The following sample results exceeded the IGW SSL for the indicated parameters:

- Antimony:
  - SB-01 (19.2-19.7 ft bgs)
  - SB-02 (14-16 ft bgs) and (19.5-20 ft bgs)

- Barium:
  - SB-02 (14-16 ft bgs)

- Beryllium:
  - SB-01 (14-16 ft bgs) and (19.2-19.7 ft bgs)
  - SB-02 (19.5-20 ft bgs),
  - SB-03 (11.5-12 ft bgs), (12-14 ft bgs), (16-18 ft bgs and duplicate), and (18-19.3 ft bgs),
  - SB-04 (7.5-8 ft bgs), (8.5-9 ft bgs), and (17.3-17.8 ft bgs)
  - SB-05 (5-5.5 ft bgs) and (7.5-8 ft bgs)
  - AC-02 (6-8 ft bgs), (8.5-9 ft bgs), and (12-12.5 ft bgs)
  - AC-03 (10-11 ft bgs)
  - AC-04 (9-9.5 ft bgs)

- Cadmium:
  - SB-01 (11.5-12 ft bgs) and (19.2-19.7 ft bgs),
  - SB-02 (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
  - SB-04 (7.5-8 ft bgs) and (13.5-14 ft bgs)
  - SB-05 (5-5.5 ft bgs) and (7.5-8 ft bgs)

- AC-01 (7.5-8 ft bgs) and (14-14.5 ft bgs)

- Lead:
  - SB-01 (5-5.5 ft bgs), (11.5-12 ft bgs), (14-16 ft bgs), and (19.2-19.7 ft bgs)
  - SB-02 (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
  - SB-03 (5.5.-6 ft bgs) and (12-14 ft bgs)
  - SB-04 (5.5-6 ft bgs), (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs)
  - SB-05 (5-5.5 ft bgs), (7.5-8 ft bgs and duplicate), (8.5-9 ft bgs), (12.5-13 ft bgs), and (14.7-15.2 ft bgs)
  - AC-01 (7.5-8 ft bgs), (14-14.5 ft bgs), and (18-20 ft bgs and duplicate)
  - AC-02 (6-8 ft bgs), (8.5-9 ft bgs), (12-12.5 ft bgs), (15-15.5 ft bgs), and (17.5-18 ft bgs)
  - AC-03 (5.5-6 ft bgs and duplicate), (6-8 ft bgs), (9-9.5 ft bgs), and (10-11 ft bgs)
  - AC-04 (9-9.5 ft bgs)

- Mercury:
  - SB-01 (5-5.5 ft bgs), (11.5-12 ft bgs), and (14-16 ft bgs)
  - SB-02 (11-11.5 ft bgs), (12-14 ft bgs), (14-16 ft bgs), and (19.5-20 ft bgs)
  - SB-04 (5.5-6 ft bgs), (7.5-8 ft bgs), (8.5-9 ft bgs), and (13.5-14 ft bgs)
  - SB-05 (5-5.5 ft bgs), (7.5-8 ft bgs and duplicate), (8.5-9 ft bgs), (12.5-13 ft bgs), and (14.7-15.2 ft bgs)
  - AC-01 (7.5-8 ft bgs), (14-14.5 ft bgs), and (18-20 ft bgs and duplicate)
  - AC-02 (6-8 ft bgs), (8.5-9 ft bgs), (12-12.5 ft bgs), (15-15.5 ft bgs), and (17.5-18 ft bgs)
  - AC-03 (5.5-6 ft bgs and duplicate), (6-8 ft bgs), (9-9.5 ft bgs), and (10-11 ft bgs)
  - AC-04 (2.5-3 ft bgs and duplicate), (7.5-8 ft bgs), and (9-9.5 ft bgs)

- Nickel:
  - SB-02 (14-16 ft bgs) and (19.5-20 ft bgs)

3.4. Monitoring Well Slug Testing

Slug test data were analyzed using AquiferWin-32 software to estimate hydraulic conductivity ranges for the tested wells, using the Bouwer and Rice (1976) method. Figures 4-1 through 4-12 present graphs of slug test water-level and time data and the interpreted straight-line fits for each of the three tests conducted at each of the Site monitoring wells. Based on the straight-line fits and well-specific input parameters, estimated hydraulic conductivity values were calculated using the software. Well-specific input parameters include borehole diameter, PVC well diameter, and submerged screen length.

Table 6 presents the hydraulic conductivity values calculated for each test. Average values derived from the three slug tests conducted on each well are also presented on Table 6 and summarized below:

Well	Average Hydraulic Conductivity (ft/day)
AC-01	16.67
AC-02	19.51

AC-03	113.79
AC-04	44.55

3.5. Groundwater Elevation Monitoring

Groundwater elevations were calculated based on the collected water-level measurement and survey data. Table 7 presents groundwater elevations for Site wells and Veolia monitoring wells MW-2 and MW-5. As indicated on the table, the presence of free product was not observed in Site monitoring wells during the two water-level measurement events. Floating free product was measured in MW-2 by Veolia's consultant on June 8, 2011; the reported free product thickness was 0.05 ft. As indicated on Table 7, the MW-2 groundwater elevation was adjusted for the downward displacement due to free product.

A groundwater surface contour map based on the June 8, 2011 groundwater elevations is presented as Figure 3 (the NJDEP required Ground Water Map Reporting Form is provided as Appendix G). Figure 3 indicates groundwater on the south side of the Site flows north-northwest to northwest towards Assunpink Creek. Groundwater flow on the north side of the Site likely flows south towards Assunpink Creek (based on similar geology and groundwater elevations on both sides of the creek); however, additional monitoring points would be required to evaluate this assumption.

Figure 3 and Table 7 also present surface water elevations measured on June 8, 2011 and the surveyed weephole-bottom elevations. Based on these data, groundwater elevations at the Site on June 8, 2011 were about 1.5 to 3.75 ft higher than the range of weephole-bottom elevations and about 4 ft higher than the surface water levels measured in Assunpink Creek on the same day.

Figure 5-1 presents groundwater elevations measured in AC-02 and AC-04 with electronic data-logging pressure transducers from May 9 to June 8, 2011. This figure also shows the range of surveyed weephole-bottom elevations and the range of surface water elevations collected at SW-01 and SW-02. The figure shows that over the 30-day data logging period, groundwater elevations at AC-02 and AC-04 remained more than 2 ft above the weepholes and more than 3 ft above surface water elevations measured on May 23 and June 8, 2011. It should be noted that both monitoring wells are relatively close to the stream culvert walls, so the groundwater elevations between the monitoring wells and weepholes should be similar.

Figure 5-2 shows 30-day groundwater elevation measurements at AC-02 and AC-04 compared to daily precipitation data obtained from a monitoring station at the Mercer County airport near Trenton, NJ. Figure 5-3 shows the groundwater elevations in these two wells compared to average barometric pressure measured at the Mercer County airport monitoring station.

3.6. Surveying

Monitoring well locations, soil boring locations, surface water sampling/measurement points, and the surveyed weephole locations are shown on Figure 2. Elevations for these Site features are listed in Table 7.

3.7. Groundwater Sampling

Groundwater samples were collected from each monitoring well following parameter stabilization for three consecutive readings, based on parameter stabilization criteria described in the Work Plan and above in Section 2.6. Groundwater sampling logs are presented in Appendix C and related field documentation is included in Appendix D. The logs and field documentation contain information as required by the Work Plan, including dates and times samples were collected, water level information and field parameter measurements. Prior to sampling, turbidity was measured at less than 40 NTU in purge water from each well.

The groundwater analytical methods and QC samples are presented in Table 3-1. Groundwater sample analytical results are presented in Tables 3-2 through 3-8. In Tables 3-2 through 3-7, results are compared to the NJDEP Ground Water Quality Criteria for Class IIA Aquifers (GWQC) and compared to the Trenton Sewer Utility Local Limits (TSULLs) in Table 3-8. The GWQC for a given constituent represent the higher of the practical quantitation limit (PQL) or the health-based ground water quality criterion (GWQC). TSULLs are included in Appendix H. In Table 3-8, total toxic organics (TTO) results are compared to TSULLs. Table 3-9 presents a summary of the groundwater analytical results that exceed GWQC (there were no exceedances of TSULLs).

<u>VOC Results</u>

VOC groundwater sample analytical results (Table 3-2) indicate that no sample results exceeded the GWQC or the TSULLs.

VOC TICS were detected in three groundwater samples. The NJDEP has established Interim Generic Groundwater Criteria for Synthetic Organic Chemicals (SOCs). The SOCs are group into two classes; those chemicals with evidence of carcinogenicity (carcinogens) and those lacking evidence of carcinogenicity (non-carcinogens). For carcinogens, the interim generic groundwater criteria is 5 µg/L for individual SOCs and 25 µg/L total SOCs, which includes VOC TICs. For non-carcinogens, the interim generic groundwater criteria is 100 µg/L for individual SOCs and 500 µg/L total SOCs, including VOC TICs. The VOC TIC detections (total) in groundwater were as follows:

- AC-01, 5.9 micrograms per liter (µg/L)
- Duplicate of AC-01, 11.5 µg/L
- AC-03, 202.2 µg/L

The concentration of each of the VOC TICs detected in groundwater was estimated (i.e., below the Reporting Limit), with a maximum concentration of 23 µg/L. The VOC TICs were primarily alkanes, alkenes, alkyl benzenes and indene isomers which are non-carcinogens.

<u>SVOC Results</u>

SVOC groundwater sample analytical results are presented in Table 3-3. As indicated in Table 3-3, no sample results exceeded the GWQC or the TSULLs.

SVOC TICs were detected in three groundwater samples. Similarly for SVOCs, SOCs are grouped into carcinogens and non-carcinogens as described above. For carcinogens, the interim generic groundwater criteria is 5 µg/L for individual SOCs and 25 µg/L total SOCs, which includes SVOC TICs. For non-carcinogens, the interim generic groundwater criteria is 100 µg/L for individual SOCs and 500 µg/L total SOCs, including SVOC TICs. SVOC TIC detections (total) were as follows:

- AC-01, 4 µg/L
- Duplicate of AC-01, 4.1 µg/L
- AC-03, 101.2 µg/L

The concentration of each of the SVOC TICs detected in groundwater was estimated (below the Reporting Limit), with a maximum concentration of 11 µg/L. The SVOC TICs were primarily alkyl benzene and indene isomers, which are non-carcinogens.

Pesticide and Herbicides Results

Pesticide and herbicide groundwater sample analytical results (Table 3-4) indicate that no sample results exceeded the GWQC. TSULLs have not been established for individual pesticides or herbicides.

PCB Results

PCB groundwater sample analytical results are presented in Table 3-4. As indicated in the table, no sample results exceeded the GWQC. TSULLs have not been established for individual PCBs.

TCDD and Oil & Grease Results

TCDD groundwater sample analytical results are presented in Table 3-5. The results show that dioxin was not detected in the collected groundwater samples.

Oil and grease analysis results are shown in Table 3-5. Three samples had detectable concentrations of oil and grease; however, oil and grease was also detected in the associated method blank for these samples. A regulatory standard for oil and grease has not been established by the NJDEP. Oil and grease detections were as follows:

- AC-01, 4 mg/L
- AC-02, 1.3 mg/L
- AC-04, 1.6 mg/L

TTO Results

TTO groundwater sample analytical results are presented in Table 3-6. TTO is defined as the sum of all quantifiable concentrations of organic compounds which are listed in pretreatment standards in the Code of Federal Regulations (40 CFR Part 433) that are equal to or above 10 µg/L. A list of these organic compounds is provided in Appendix H. For these compounds, there were no concentrations detected above 10 µg/L in the groundwater samples. In accordance with the pretreatment standard regulation, concentrations of 10 µg/L or less are not counted toward the TTO value, so a value of zero is used when calculating the TTO sum; as such, no sample results exceed the TSULL for TTO, as shown on Table 3-7.

Metals and General Chemistry Results

Groundwater analytical results for metals are presented in Table 3-8. As indicated in the table, no sample results exceed the TSULLs. Sample results exceeded the GWQC (indicated in parentheses) for the following constituents:

- Iron (300 µg/L): AC-01 and duplicate, AC-02 and AC-03
- Lead (5 µg/L): AC-01
- Manganese (50 µg/L): AC-01 and duplicate, AC-02 and AC-03
- Sodium (50,000 µg/L): all results (AC-01 and duplicate, AC-02, AC-03 and AC-04)

The BOD and TSS results from groundwater samples are presented in Table 3-8. GWQC and TSULLs have not been established for these constituents. Two samples had detectable BOD concentrations; however, BOD was also detected in the associated method blank for these samples. TSS was detected in three samples. Detected BOD and TSS results are as follows:

- BOD: AC-01, 3.3 mg/L
  AC-04, 2.4 mg/L

- TSS: AC-01, 12 mg/L
  AC-02, 14 mg/L
  AC-04, 11 mg/L

The pH values measured in the field during groundwater sample collection with a Horiba U-52 are presented in Table 3-8. The groundwater sampling logs with the field pH values are presented in Appendix C. As indicated in the table the GWQC for pH ranges from a pH of 6.5 to 8.5. For TSULLs the pH range is 5.5 to 9.5. The pH in groundwater at well AC-04 was 6.47, slightly below the GWQC range for pH. The other pH values were within the GWQC range of pH. All four pH values were within the TSULL range for pH. The field measured pH values are as follows:

- pH: AC-01, 7.02
  AC-02 7.11
  AC-02, 7.13
  AC-04, 6.47

As described in Section 2, the pH values were measured during monitoring well purging using an in-line water-quality meter. The values reported in this section and in Table 3-8 represent the last (equilibrated) measurement just prior to collection of groundwater samples.

3.8. Surface Water Sampling

A summary of the surface water analytical methods and QC samples is presented in Table 4-1. Surface water sample analytical results are presented in Tables 4-2 through 4-5. Surface water analytical results are compared to Project Screening Levels (PSLs) which are based on the NJ Fresh Water Chronic Aquatic Criteria (FWCAC) and NJ Fresh Water Human Health Criteria (FWHHC).

VOC Results

VOC surface water sample analytical results are presented in Table 4-2. As indicated in the table, no sample results exceed the PSLs. Chloroform was the only VOC detected in surface water at estimated concentrations of 0.43 and 0.46 µg/L at SW-01 and SW-02, respectively. VOC TICs were not detected in surface water samples.

SVOC and Oil & Grease Results

SVOC surface water sample analytical results are presented in Table 4-3. As indicated in the table, no sample results exceed the PSLs. 2-Methylnaphthalene was the only SVOC detected in the SW-01 sample at an estimated concentration 0.77 µg/L. For SW-02, bis(2-ethylhexyl)phthalate was the only SVOC detected at 1.2 µg/L (estimated concentration). SVOC TICs were not detected in surface water samples.

Oil and grease analytical results for surface water samples are also presented in Table 4-3. As indicated in the table, a PSL (FWHHC and FWCAC have no current criteria) has not been established for this analyte. The SW-02 sample had a detectable concentration of oil and grease (1.9 mg/L); however, oil and grease was also detected in the associated field blank for this sample at the same concentration (1.9 mg/L).

Pesticide, Herbicides and PCB Results

Surface water sample analytical results for pesticides, herbicides, and PCBs are presented in Table 4-4. The two surface water samples had no detections for pesticides, herbicides or PCBs. No sample results exceeded the PSLs for these analyses.

Metals Results

Metals surface water sample analytical results are presented in Table 4-5. As shown in the table, none of the detected metals results exceeded the PSLs for metals.

3.9. Investigation Derived Waste Sampling

A summary of the IDW analytical methods and QC samples is presented in Table 5-1. The solid and aqueous IDW sample results are presented in Table 5-2. As indicated in the table, neither the TCLP results nor the other RCRA characteristic tests showed any parameter concentrations or properties that exceeded the applicable criteria.

The analytical results from the collected IDW samples indicate that the solid and aqueous IDW is below regulatory levels (i.e., these materials are non-hazardous). In accordance with the Work Plan, IDW was dispersed onsite at locations designated by USACE on July 5, 2011. The IDW fluids were emptied from the drums such that the flow did not cause erosion of soil, ponded water on the ground surface or ran into any drainage ditches, swales, or in Assunpink Creek. The IDW solids were emptied in the approximately vicinity of each of the completed borings and the solids were spread out so there were no mounded soil piles. The emptied 55-gallon drums were removed from the Site by O'Brien & Gere on July 5, 2011.

4. Discussion of Results

4.1. Monitoring Well Installation

Four overburden groundwater monitoring wells were installed with depths ranging from 11.5 to 20 ft bgs. Fill material was encountered at each of the drilling locations, ranging in thickness from 8 ft to greater than 20 ft. The fill materials consisted mostly of silty sand and gravel, but also contained lesser amounts of cobbles, boulders, concrete, asphalt, wood, and glass fragments. Fill composition was relatively consistent at the drilling locations across the Site.

At two locations (AC-02 and AC-04), native overburden material, consisting mostly of sand and gravel was encountered beneath the fill material. At AC-04, the native overburden material was observed to be about 6 ft thick; at AC-02, the material was at least 2 ft thick, but was not fully penetrated to the total depth of the pilot boring (18 ft bgs). Bedrock, consisting of schist, was encountered at AC-03, directly beneath the fill material (11 ft bgs), and at AC-04 beneath the native overburden material (12 ft bgs). The upper portion of the bedrock was observed to be slightly to severely weathered. Bedrock was not encountered in borings AC-01 (20 ft bgs) and AC-02 (18 ft bgs).

Material encountered in pilot borings is consistent with published descriptions of surficial material and geology in the area of the Site. Fill material was expected, based on the urban setting of the Site, and is documented in this area of Trenton (NJGS, 2004). Native overburden material (mainly sand and gravel) encountered beneath the fill is interpreted as stream deposits associated with Assunpink Creek. Bedrock underlying the fill material and native overburden material is interpreted as the Wissahickon Schist Formation based on outcrops of this unit mapped in Pennsylvania just west of the Site (Socolow and Berg, 1978).

Based on field screening, evidence of impact was observed at AC-01, AC-03, and AC-04. At AC-01, petroleum odors and low-level PID readings correspond to soil sample results with detected concentrations of constituents related to petroleum products, including EPH, lead and polycyclic aromatic hydrocarbons (PAHs[1]).

At AC-03, elevated PID readings, petroleum odors and a black, oily coating on fill material were observed. Analytical results from soil samples collected from this impacted interval include EPH, lead, PAHs and benzene, toluene, ethylbenzene, and xylene (BTEX). AC-03 was the only soil sampling location where BTEX was detected. AC-03 field observations and analytical results indicate petroleum product impact to the subsurface at this location at depths of about 9 to 11 ft bg. The observed impact is about two ft below the encountered depth to water in this boring (7.2 ft bg) and the range of water-table depths identified from the transducer measurements in AC-02 and AC-04 (about 7.4 to 7.8 ft bg and 6.9 to 7,5 ft bg, respectively). Under these conditions, the less-dense

[1] Acenaphthene, acenaphthylene, anthracene, benz[a]anthracene, benzo[a]pyrene, benzo[e]pyrene, benzo[b]fluoranthene, benzo[ghi]perylene, benzo[k]fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, and pyrene are collectively referred to as PAHs.

petroleum impact would tend to migrate upward and could be transported along the water table surface.

A slight chemical odor was detected in fill material sampled from 2.5-3 ft bgs at AC-04. However, soil sample results collected from this interval did not indicate detectable concentrations of VOCs, SVOCs, or other project-related analytical parameters.

4.2 Soil Borings

Five soil borings were installed with depths ranging from 17.3 to 20 ft bgs. Material encountered in the soil borings was similar to that encountered at the monitoring well locations, except that native overburden material was not encountered in soil borings. Fill material was encountered at soil boring locations ranging in thickness from 13 ft to greater than 20 ft. Bedrock, consisting of schist, was encountered beneath fill material at SB-01, -03, -04 and -05. Similar to monitoring well locations, the upper portion of the bedrock was observed to be slightly to severely weathered. Bedrock was not encountered in SB-02 (completed to 20 ft bgs). Subsurface material encountered at soil boring locations is also consistent with published descriptions, as described above for the monitoring wells.

As noted above in Section 3.2, impacted material (based on field screening) was not observed at the soil boring locations, except at SB-01 where petroleum and creosote odors were observed from 12-19.5 ft bgs and low-level PID readings were recorded. Analytical results from soil samples collected from this interval at SB-01 contained similar constituent concentrations to soil samples from SB-02, where field observations did not indicate the presence of soil impact.

The observed conditions at SB-01 may be due to asphalt in the fill material. At AC-01, located adjacent to SB-01, petroleum odors and low level PID readings were also observed at depths similar to SB-01. AC-01 soil sample results were also similar to those from SB-01 and SB-02. Collectively, field observations and analytical results from AC-01, SB-01, and SB-02 are consistent with past use of this area of the Site.

4.3. Soil Sampling

In addition to comparison to PSLs, the soil sample results were evaluated in the context of constituent concentrations listed in the *Historic Fill Database Summary Table, Appendix D* of the TRSR (NJAC 7:26E, amended February 22, 2011, Historic Fill Database), when applicable. The Historic Fill Database (see Appendix I) presents ranges of concentrations for constituents typically found in historic fill. The soil results were also evaluated in the context of ambient soil constituent concentrations for New Jersey, based on studies described in *A Summary of Selected Soil Constituents and Contaminants at Background Locations in New Jersey* (NJDEP & Energy, 1993, Background Soil Summary) and *Ambient Levels of Metals in New Jersey Soils* (Sanders, 2003).

<u>VOC Results</u>

VOC exceedances of PSLs were limited to benzene detections at AC-03 above the IGW SSL. The presence of elevated concentrations of benzene and other BTEX compounds at this location corresponds to elevated PID readings, petroleum odors, and oily material observed during drilling at AC-03.

SVOC Results

SVOCs were detected at each of the soil sampling locations (AC-01 through AC-04 and SB-01 through SB-05). With the exception of AC-04 and SB-03, SVOC sample results at each of the locations exceeded PSLs for one or more of the following PAHs: Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene. Although these exceedances correspond with or are adjacent to drilling locations where field observations indicated petroleum impact, the results are also typical of historic fill materials and fall within concentration ranges published in the Historic Fill Database for PAHs (see Appendix I).

The concentration of naphthalene at SB-02 (19.5-20 ft bgs) does not appear to be characteristic of historic fill or related to ambient soil quality in New Jersey. Although field observations did not indicate the presence of impacted material at SB-02, field evidence of petroleum impact was observed in the vicinity of this pilot boring/monitoring well during test pit excavations (TP-01, TP-02, and TP-03 from the previous Site investigation) and at drilling locations during the current investigation. At the test pit locations and at SB-01 and SB-02, petroleum odors and elevated PID readings were observed/measured in soil.

EPH and Oil and Grease Results

Concentrations of EPH were detected in most of the soil samples; however, total EPH results were below 1,700 mg/kg and it was not necessary to calculate site-specific soil remediation criteria. Among the sample results, the highest EPH concentrations were detected in soil samples from SB-01, SB-02, and AC-01. The highest concentration of oil and grease was also detected at SB-02.

Higher EPH concentrations were also present at the AC-03 location, where field observation indicated petroleum impact in the subsurface.

Pesticide and Herbicide Results

Herbicide concentrations in soil samples did not exceed PSLs and only one pesticide concentration exceeded a PSL. The sample result for dieldrin from SB-04 (13.5-14 ft bgs) at 0.0053 mg/kg exceeded the IGW SSL of 0.003 mg/kg; however, this result is within the range of detected dieldrin concentration values published in the Background Soil Summary (New Jersey Department of Environmental Protection & Energy. 1993), and may be attributed to ambient conditions.

PCB Results

Two PCBs (Aroclor 1254 and 1260) were detected at each of the soil sampling locations with the exception of locations SB-03 and AC-04. Other PCBs were not detected in soil samples. Concentrations of these two PCBs exceeded the PSLs only at SB-02 and SB-04. These exceedances do not appear to be characteristic of historic fill or related to ambient soil quality. These Aroclors are heavier, more-chlorinated PCBs that are not typically associated with electrical equipment; further delineation of this area would be required to evaluate the origin and extent of these low-level detections.

Metals Results

Concentrations of the following metals exceeded one or more PSLs at one or more soil sampling locations:

- Antimony
- Barium
- Beryllium
- Cadmium
- Lead
- Mercury
- Nickel
- Thallium

However, the results for beryllium, cadmium, and lead fall within the concentration ranges published in the Historic Fill Database. With exceptions noted below, mercury and nickel concentrations exceeding PSLs are within the range of concentrations presented in the Background Soil Summary.

PSL exceedances of antimony, barium, and thallium and the following sample results for the indicated constituents appear to be Site-related:

- Mercury: AC-03 (5.5-6 ft bgs)
- Nickel: SB-02 (14-16 ft bgs)

Soil Management During Creek Restoration

Overall, most of the soil onsite may be reused, provided that a soil reuse plan is prepared in accordance with NJAC 7:26E-6.4(d) and the NJDEP Guidance Document for Remediation of Contaminated Soils. For soils that remain onsite above the most stringent RDCSRS, a soil cap (i.e., engineering controls) followed by a Deed Notice (i.e., institutional controls) would also be required. These steps would be necessary because the concentrations of some constituents exceed the RDCSRS in several samples. The requirements concerning engineering controls and institutional controls are outlined in NJAC 7:26E-8. Alternatively, soil with constituent concentrations above the RDCSRS could be delineated and disposed offsite; remaining soil could be kept onsite without the need for capping or a Deed Notice.

The concentrations of several constituents in soil at specific locations do not appear to be characteristic of historic fill or related to ambient soil quality. Additional investigation, including delineation, may be necessary at the following locations:

Sample From:	Exceeds the:	For:
AC-3 (9, 10.5, and 11.2 ft bgs)	IGW SSL	Benzene
SB-02 (19.5-20 ft bgs)	RDCSRS	Naphthalene
SB-01 (19.2-19.7 ft bgs)	RDCSRS	Antimony
SB-02 (14-16 and 19.5-20 ft bgs) and SB-01 (19.2-19.7 ft bgs)	IGW SSL	Antimony
SB-03 (16-18 ft bgs)	IGW SSL	Barium

Sample From:	Exceeds the:	For:
SB-03 (16-18 ft bgs)	RDCSRS	Thallium
SB-02 (14-16 ft bgs) and SB-03 (16-18 ft bgs)	IGW SSL	Thallium
AC-03 (5.5-6 ft bgs)	IGW SSL	Mercury
SB-2 (14-16 ft bgs)	IGW SSL	Nickel
SB-02 (14-16 and 19.5-20 ft bgs)	RDCSRS and IGW SSL	Aroclor 1254
SB-02 (14-16 ft bgs)	N-RDCSRS	Aroclor 1254
SB-02 (19.5-20 ft bgs) and SB-04 (7.5-8 ft bgs)	RDCSRS and IGW SSL	Aroclor 1260
SB-04 (7.5-8 ft bgs)	N-RDCSRS	Aroclor 1260

4.4. Monitoring Well Slug Testing

Figures 4-1 through 4-12 present the slug test water-level and time data, interpreted straight-line matches, and calculated hydraulic conductivity values. The slug tests results indicate an estimated hydraulic conductivity for the overburden aquifer ranging from 16.67 to 113.79 ft/day.

The figures show that within the first few seconds of the slug tests, groundwater rapidly infiltrates the well; this initial, rapid infiltration is interpreted to be drainage from the sand pack into the well immediately following removal of the slug. After sand pack drainage, the graphs show approximately one ft of recharge into the well over the next 30 seconds; this recharge period is interpreted to be representative of the aquifer, and was selected for straight-line matching/estimation of hydraulic conductivity. Late data (test data after 30 seconds) was interpreted to be indicative of groundwater approaching equilibration and not representative of steady state conditions. Later data shows slower groundwater infiltration into the well as equilibration is approached; only about 0.2 ft of recharge was recorded for both the test periods of 30 seconds to one minute and one minute to two minutes.

The test periods selected for straight-line matching appear to be most representative of aquifer conditions based on the interpretations discussed above.

The calculated hydraulic conductivity values are in the range of published hydraulic conductivity values for similar subsurface material (silty fine to medium sands; Bear, 1972) and are consistent with materials sampled in each soil boring, except for AC-03. The AC-03 test results (113.79 ft/day) is higher than expected for the silty sand with gravel encountered in this boring, which did not appear significantly different from fill material observed in the other borings.

However, since slug tests evaluate the hydraulic conductivity of a relatively small aquifer volume surrounding the test well, heterogeneities in the fill (e.g., rock, concrete, sand layers, or other debris) could be sufficient to cause the higher hydraulic conductivity value. As such, these values are only representative of the aquifer material around each well and could be higher or lower, depending on the characteristics and thickness of the overburden material, at other Site locations.

4.5. Groundwater Elevation Monitoring

Site groundwater elevations depicted on Figure 3 show that groundwater at the Site flows towards Assunpink Creek from both sides of the Site. On the south side the Site, groundwater flows north-northwest to northwest towards the creek; on the north side of the Site, groundwater likely flows in a southern direction towards Assunpink Creek (there is only one monitoring well providing groundwater elevation data on the north side). This indicates that groundwater likely discharges to Assunpink Creek and that the creek is a gaining stream (i.e., groundwater discharges into the stream channel) within the investigation area.

Groundwater elevations measured in Site wells (Table 7 and Figure 5-1) were higher than weephole-bottom elevations, indicating that groundwater can discharge to Assunpink Creek through the weepholes.

As shown on Figures 5-1 through 5-3, groundwater elevations in AC-02 and AC-04 varied by less than one foot over the 30-day monitoring period. Water levels in both wells increased in response to precipitation (Figure 5-2). The response to precipitation was more pronounced in AC-04, suggesting a greater connection to surface infiltration at this location.

Changes in groundwater elevations in response to variation in barometric pressure were varied, as shown on Figure 5-3. Increasing barometric pressure typically suppresses the water table and causes lower groundwater elevations; however, based on the data evaluated for the Site, there does not appear to be a clear correlation between Site groundwater elevations and barometric pressure.

4.6. Groundwater Sampling

Table 3-9 presents a summary of PSL exceedances for groundwater analytical results. TSULLs are not shown on this table, since there were no groundwater TSULL exceedances. Based on results from one round of groundwater sampling, Site groundwater is within the regulatory limits for water accepted at the Trenton Sewer Utility.

As shown on Table 3-9, exceedances of GWQC were limited to metals and a single pH value measured in the field for AC-04. GWQC exceedances for the collected groundwater samples are summarized by location below:

- AC-01: iron, lead, manganese, and sodium
- AC-02: iron, manganese, and sodium
- AC-03: iron, manganese, and sodium
- AC-04: sodium and pH (field measured)

The presence of elevated sodium levels in groundwater are likely due to infiltration of brine and/or road salt that is typically used in this area for road de-icing. Iron and manganese groundwater concentrations at the Site are within published ambient groundwater concentration ranges for Southern New Jersey (Serfes and Bousenberry, 2007). This reference also indicates that chemically reducing groundwater conditions are conducive to the mobility of these two metals, and ORP and DO measurements collected during groundwater sampling indicate that groundwater at AC-01, AC-02 and AC-03 is reducing. Reducing geochemical environments typically have negative ORP values and

DO concentrations below 3 to 4 mg/L. Manganese and iron groundwater concentrations are two orders of magnitude lower in AC-04, where ORP and DO measurements indicate oxidizing groundwater conditions. Oxidizing geochemical environments typically have positive ORP values and DO concentrations above 3 to 4 mg/L.

4.7. Surface Water Sampling

The PSLs for surface water were not exceeded in the two surface water samples collected from Assunpink Creek at the Site.

4.8. Investigation Derived Waste Sampling

TCLP results and other RCRA characteristic tests showed IDW result did not exceeded the applicable criteria (i.e., the IDW samples were classified as non-hazardous waste).

5. Conclusions

5.1. Monitoring Well Installation

- Subsurface material encountered during installation of monitoring wells AC-01 through AC-04 conforms to published descriptions of geology in the area of the Site. These materials consisted of:

    - Fill material, encountered at each monitoring well drilling location and ranging in thickness from 8 ft to greater than 20 ft. The presence of fill material at the Site is documented in published reports by the NJGS.

    - Native overburden material, primarily consisting of sand and gravel, encountered beneath the fill material at two locations (AC-02 and AC-04). At AC-04, the native overburden material was observed to be 6 ft thick; at AC-02 the material was at least 2 ft thick. This material is interpreted as stream deposits associated with the Assunpink Creek.

    - Bedrock (schist) encountered at AC-03 directly beneath the fill material and at AC-04 beneath the native overburden material. The upper portion of the bedrock was observed to be severely to slightly weathered. Bedrock was not encountered in borings at AC-01 (20 ft deep) and AC-02 (18 ft deep). The bedrock in the Site vicinity is interpreted as the Wissahickon Schist Formation (Socolow and Berg, 1978).

- Field screening observations indicated petroleum impact in soil at AC-01 and soil analytical results indicate petroleum-related products are present in soil at AC-01 including EPH, lead, and PAHs. However, of these constituents, only lead concentrations exceed PSLs at levels above the concentration ranges listed in the Historic Fill Database.

- At AC-03, elevated PID readings, petroleum odors, and a black, oily coating on fill material were observed. Analytical results from soil samples collected from the impacted interval (at and below the encountered water table) include EPH, lead, PAHs, and BTEX compounds are present. BTEX compounds were not detected at other soil sampling locations. The depth of the encountered impact is about two ft below the water table, which implies that the oily material could be mobilized under certain conditions.

5.2. Soil Borings

- Subsurface materials encountered during installation of soil borings SB-01 through SB-05 were similar to the pilot borings, although native overburden material was not encountered in the soil borings. At the soil boring locations, fill material ranged in thickness from 13 ft to greater than 20 ft.

- Bedrock, consisting of schist, was encountered beneath fill material at SB-01, -03, -04 and -05. The upper portion of the bedrock was observed to be severely to slightly weathered. Bedrock was not encountered in SB-02 (20 ft deep).

- Similar to AC-01 (located adjacent), field screening observations indicated petroleum impact in soil at SB-01; soil analytical results confirmed the presence of petroleum-related products, although concentrations are within historic fill concentration ranges.

5.3. Soil Sampling

- Most of the PSL exceedances within soil can be attributed to ambient soil concentrations present in New Jersey and/or concentrations that may typically be present in historic fill (see Appendix I). Constituents which do not appear to be associated with ambient soil or historic fill include benzene, naphthalene, dieldrin, PCBs, antimony, barium, manganese, mercury, nickel, sodium, and thallium.

- Soil concentrations of several compounds at specific locations do not appear to be characteristic of historic fill or related to ambient soil quality. Additional investigation, including delineation, may be necessary for the listed PSL at soil boring locations detailed in Section 4.3.

- Reuse of the majority of soil onsite may be possible provided that a soil reuse plan is prepared in accordance NJAC 7:26E-6.4(d) and the NJDEP guidance document for the Remediation of Contaminated Soils. The reused soil would require a cap (engineering control), followed by a Deed Notice (institutional control), as several samples exceed RDCSRS. Alternatively, soil that is above RDCSRS would need to be delineated and disposed offsite, and the remainder kept onsite without a cap and Deed Notice.

5.4. Monitoring Well Slug Testing

- The estimated hydraulic conductivity for the overburden aquifer at the Site ranges from 16.67 to 113.79 ft/day.

5.5. Groundwater Elevation Monitoring

- Groundwater on the south side the Site flows north-northwest to northwest towards Assunpink Creek and groundwater flow on the north side of the Site likely flows in a southern direction towards Assunpink Creek. Thus, groundwater flows towards and discharges to Assunpink Creek from both sides of the Site. Assunpink Creek is a gaining stream within the investigation area.

- Groundwater elevations measured in Site wells were higher than weephole-bottom elevations. Taken together with the interpreted groundwater flow direction, this indicates that groundwater can discharge to Assunpink Creek through the weepholes.

- Groundwater levels at AC-02 and AC-04 varied by less than one foot over the 30-day monitoring period. Water levels in both wells increased in response to precipitation events.

5.6. Groundwater Sampling

- Based on results from one round of groundwater sampling, Site groundwater is within the acceptable limits of water accepted at the Trenton Sewer Utility.

- Exceedances of GWQC were limited to metals and a single pH value, as follows:

    - AC-01: iron, lead, manganese, and sodium
    - AC-02: iron, manganese, and sodium
    - AC-03: iron, manganese, and sodium
    - AC-04: sodium and pH (field measured)

- Elevated sodium levels in groundwater are consistent with the infiltration of brine and/or road salt likely used for road de-icing in the Site vicinity.

- Iron and manganese groundwater concentrations at the Site are within published ambient groundwater concentration ranges for Southern New Jersey (NJGS, 2007).

5.7. Surface Water Sampling

- No detected concentrations in the surface water samples exceeded the PSLs.

5.8. Investigation Derived Waste Sampling

- IDW generated during this investigation was classified as non-hazardous waste.

6. References

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Tables

Table 1
Summary of Monitoring Well and Soil Boring Data
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

	Pilot Borings/Monitoring Wells*				Soil Borings					Off-Site Monitoring Wells	
	AC-01	AC-02	AC-03	AC-04	SB-01	SB-02	SB-03	SB-04	SB-05	MW-02	MW-05
Completion Type	Flush Mount	Stick-up	Stick-up	Stick-up	-	-	-	-	-	Flush Mount	Flush Mount
Northing (NJ State Plane, feet NAD 1983)	504224.85	504287.27	504410.64	504503.25	504219.33	504222.31	504195.21	504347.15	504427.74	NA	NA
Easting (NJ State Plane, feet NAD 1983)	417984.20	418039.07	418159.56	418195.67	417955.04	417934.42	417946.27	418101.78	418211.04	NA	NA
Total Depth of Soil Boring or Pilot Boring	20.0	18.0	11.5	15.25	19.9	20.0	19.3	18.0	17.3	19.0	20.0
Total Depth of Well	20.0	14.3**	11.5	14.3***	-	-	-	-	-	19.0	20.0
Ground Surface Elev. (feet NAVD 1988)	25.24	20.4	19.4	20.2	25.12	25.34	25.36	20.17	19.75	NA	NA
Top of Inner Casing Elev. (feet NAVD 1988)	24.90	22.71	22.17	22.64	-	-	-	-	-	29.89	27.68
Screen Elev. (feet NAVD 1988)	17.9 -5.50	18.71 - 8.71	18.17 - 10.97	18.64 - 8.64	-	-	-	-	-	NA	NA
Installation Date	4/29/11	5/3/11	5/2/11	5/2/11	4/26/11	4/26/11	4/26/11	5/5/11	5/5/11	1/6/10	1/6/10
Development Date	5/5/11	5/5/11	5/4/11	5/4/11	-	-	-	-	-	1/6/10	1/6/10
Well Permit Number	E201103686	E201103687	E201103688	E201103689	-	-	-	-	-	NA	NA
Well Diameter (inches)	2	2	2	2	-	-	-	-	-	2	2
Cement grout, 5% bentonite	0 - 3	0 - 2	0 - 2	0 - 2	0 - 19.9	0 - 20.0	0 - 19.3	0 - 18.0	0 - 17.3	NA	NA
Bentonite seal	3 - 4.5	2 - 2.5	2 - 2.5	2 - 2.5	-	-	-	-	-	NA	NA
Secondary sand pack (#00 sand)	4.5 - 5	2.5 - 3.5	2.5 - 3.5	2.5 - 3.5	-	-	-	-	-	NA	NA
Primary sand pack (#0 sand)	5 - 20	3.5 - 14.3	3.5 - 11.5	3.5 - 14.3	-	-	-	-	-	NA	NA
Screen, 2-inch dia. PVC, 10-slot	7 - 19.4	4 - 14	4 - 11.2	4 - 14	-	-	-	-	-	NA	NA
Sump Depth	19.4 - 20	14 - 14.3**	11.2 - 11.5	14 - 14.3***	-	-	-	-	-	NA	NA

Footnotes:

NA - information not available; MW-2 and MW-5 are off-site wells installed by others

All depths in feet below ground surface (ft bgs)

*Pilot boring used for monitoring well installation

**Borehole sampled with split spoon to 18 ft bgs, #00 sand backfill 14.3 - 18 ft bgs

***Borehole drilled to 15.3 ft bgs, #00 sand backfill 14.3 - 15.3 ft bgs

Well finish (stickups):

Concrete pad, 3x3 ft square, min. 4-in. thick

Well finish (flush mount):

Concrete pad, 3x3 ft square, min. 4-in. thick

8 -inch diameter steel manhole

Table 2-1: Summary of Soil Analytical Methods and QC Samples
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Parameter	Method	Number of Primary Samples	Number of Duplicate Samples	Number of MS/MSD Samples
Volatile Organic Compounds (VOCs) + TICs	8260B [1]	43	5	3
Semi-Volatile Organic Compounds (SVOCs) + TICs	8270C [1]	42	5	3
Organochlorine Pesticides	8081A [1]	42	5	3
Chlorinated Herbicides	8151 [1]	42	5	3
Polychlorinated Biphenyls (PCBs)	8082 [1]	42	5	3
Oil & Grease	1664A [2] / 9071B [1]	42	5	3
Extractable Petroleum Hydrocarbon (EPH)	NJDEP EPH Method	42	5	3
Target Analyte List (TAL) Metals	6010B [1] / 7470A / 7471A[1]	42	5	3

Footnotes:

TICs - Tentatively Identified Compounds

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Method References:

1- USEPA. 2004. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 3rd Edition, Update IIIB.* Washington D.C.

2 - USEPA. 1999. *Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGTHEM;Non-polar Material) by Extraction and Gravimetry.*

Table 2-2: VOC Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-01	AC-01	AC-01	AC-01	AC-02	AC-02	AC-02	AC-02	AC-02	AC-03	AC-03	AC-03	AC-03	AC-03
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	8.0	14.0	20.0	20.0	8.0	8.5	12.0	15.0	18.0	5.5	5.5	7.5	9.0	10.5
Client Sample ID:					AC-01.08.0-08.0	AC-01.14.0-14.0	AC-01.20.0-20.0	DUP-03	AC-02. 08.0-08.0	AC-02. 08.5-08.5	AC-02. 12.0-12.0	AC-02. 15.0-15.0	AC-02. 18.0-18.0	AC-03.05.5-05.5	DUP-05	AC-03.07.5-07.5	AC-03.09.0-09.0	AC-03.10.5-10.5
Lab Sample ID:					JA74273-3	JA74273-5	JA74273-7	JA74273-9	JA74821-2	JA74821-4	JA74821-6	JA74821-8	JA74821-10	JA74600-2	JA74600-4	JA74600-6	JA74600-8	JA74600-10
Date Sampled:					4/27/2011	4/27/2011	4/27/2011	4/27/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	4/29/2011	4/29/2011	4/29/2011	4/29/2011	4/29/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)																		
Acetone	mg/kg	NS	70000	12	0.0024 U	0.12 U	0.0021 U	0.002 U	0.0025 U	0.0026 U	0.0024 U	0.0022 U	0.0021 U	0.0026 U	0.0026 U	0.0157	0.14 U	0.22 U
Benzene	mg/kg	5	2	0.005	0.00036 U	0.018 U	0.00033 U	0.00066 J	0.00039 U	0.0004 U	0.00037 U	0.00034 U	0.00033 U	0.0004 U	0.0004 U	0.0026	0.0942	0.0445 J
Bromochloromethane	mg/kg	NS	NS	NS	0.00023 U	0.011 U	0.00021 U	0.0002 U	0.00025 U	0.00026 U	0.00024 U	0.00022 U	0.00021 U	0.00026 U	0.00026 U	0.00026 U	0.014 U	0.021 U
Bromodichloromethane	mg/kg	3	1	0.005	0.00027 U	0.013 U	0.00025 U	0.00023 U	0.00029 U	0.0003 U	0.00028 U	0.00026 U	0.00025 U	0.0003 U	0.0003 U	0.0003 U	0.016 U	0.025 U
Bromoform	mg/kg	280	81	0.02	0.00016 U	0.0079 U	0.00014 U	0.00013 U	0.00017 U	0.00018 U	0.00016 U	0.00015 U	0.00015 U	0.00018 U	0.00018 U	0.00018 U	0.0094 U	0.015 U
Bromomethane	mg/kg	59	25	0.03	0.00043 U	0.021 U	0.00039 U	0.00036 U	0.00046 U	0.00048 U	0.00043 U	0.0004 U	0.00039 U	0.00047 U	0.00048 U	0.00048 U	0.025 U	0.039 U
2-Butanone (MEK)	mg/kg	44000	3100	0.6	0.0021 U	0.1 U	0.0019 U	0.0018 U	0.0022 U	0.0023 U	0.0021 U	0.002 U	0.0019 U	0.0023 U	0.0023 U	0.0023 U	0.12 U	0.19 U
Carbon disulfide	mg/kg	110000	7800	4	0.00032 U	0.016 U	0.00029 U	0.00027 U	0.00035 U	0.00036 U	0.00033 U	0.00031 U	0.00029 U	0.00036 U	0.00036 U	0.0012 J	0.019 U	0.03 U
Carbon tetrachloride	mg/kg	2	0.6	0.005	0.00059 U	0.029 U	0.00053 U	0.00049 U	0.00063 U	0.00066 U	0.0006 U	0.00056 U	0.00053 U	0.00065 U	0.00065 U	0.00065 U	0.034 U	0.054 U
Chlorobenzene	mg/kg	7400	510	0.4	0.00036 U	0.018 U	0.00032 U	0.0003 U	0.00038 U	0.0004 U	0.00036 U	0.00034 U	0.00033 U	0.0004 U	0.0004 U	0.0004 U	0.021 U	0.033 U
Chloroethane	mg/kg	1100	220	NS	0.0011 U	0.052 U	0.00096 U	0.00089 U	0.0011 U	0.0012 U	0.0011 U	0.001 U	0.00096 U	0.0012 U	0.0012 U	0.0012 U	0.062 U	0.097 U
Chloroform	mg/kg	2	0.6	0.2	0.00034 U	0.017 U	0.0003 U	0.00028 U	0.00036 U	0.00038 U	0.00034 U	0.00032 U	0.00031 U	0.00037 U	0.00038 U	0.00037 U	0.02 U	0.031 U
Chloromethane	mg/kg	12	4	NS	0.00017 U	0.0086 U	0.00016 U	0.00015 U	0.00019 U	0.0002 U	0.00018 U	0.00017 U	0.00016 U	0.00019 U	0.00019 U	0.00019 U	0.01 U	0.016 U
Cyclohexane	mg/kg	NS	NS	NS	0.00016 U	0.0079 U	0.00014 U	0.00013 U	0.00017 U	0.00018 U	0.00016 U	0.00015 U	0.00015 U	0.00018 U	0.00018 U	0.0245	1.09	0.514
1,2-Dibromo-3-chloropropane	mg/kg	0.2	0.08	0.005	0.00057 U	0.028 U	0.00052 U	0.00048 U	0.00061 U	0.00064 U	0.00058 U	0.00054 U	0.00052 U	0.00063 U	0.00064 U	0.00064 U	0.034 U	0.053 U
Dibromochloromethane	mg/kg	8	3	0.005	0.00012 U	0.0057 U	0.00011 U	0.000098 U	0.00012 U	0.00013 U	0.00012 U	0.00011 U	0.00011 U	0.00013 U	0.00013 U	0.00013 U	0.0068 U	0.011 U
1,2-Dibromoethane	mg/kg	0.04	0.008	0.005	0.00014 U	0.0071 U	0.00013 U	0.00012 U	0.00016 U	0.00016 U	0.00015 U	0.00014 U	0.00013 U	0.00016 U	0.00016 U	0.00016 U	0.0085 U	0.013 U
1,2-Dichlorobenzene	mg/kg	59000	5300	11	0.00029 U	0.014 U	0.00026 U	0.00024 U	0.00031 U	0.00032 U	0.00029 U	0.00027 U	0.00026 U	0.00032 U	0.00032 U	0.00032 U	0.017 U	0.026 U
1,3-Dichlorobenzene	mg/kg	59000	5300	12	0.00029 U	0.014 U	0.00026 U	0.00024 U	0.00031 U	0.00033 U	0.0003 U	0.00028 U	0.00026 U	0.00032 U	0.00032 U	0.00032 U	0.017 U	0.027 U
1,4-Dichlorobenzene	mg/kg	13	5	1	0.00036 U	0.018 U	0.00032 U	0.0003 U	0.00038 U	0.0004 U	0.00036 U	0.00034 U	0.00032 U	0.0004 U	0.0004 U	0.0004 U	0.021 U	0.033 U
Dichlorodifluoromethane	mg/kg	230000	490	25	0.001 U	0.049 U	0.0009 U	0.00084 U	0.0011 U	0.0011 U	0.001 U	0.00095 U	0.00091 U	0.0011 U	0.0011 U	0.0011 U	0.059 U	0.092 U
1,1-Dichloroethane	mg/kg	24	8	0.2	0.00015 U	0.0072 U	0.00013 U	0.00012 U	0.00016 U	0.00016 U	0.00015 U	0.00014 U	0.00013 U	0.00016 U	0.00016 U	0.00016 U	0.0086 U	0.013 U
1,2-Dichloroethane	mg/kg	3	0.9	0.005	0.00036 U	0.018 U	0.00033 U	0.00031 U	0.00039 U	0.00041 U	0.00037 U	0.00035 U	0.00033 U	0.0004 U	0.00041 U	0.00041 U	0.021 U	0.034 U
1,1-Dichloroethene	mg/kg	150	11	0.005	0.0007 U	0.035 U	0.00063 U	0.00059 U	0.00075 U	0.00078 U	0.00071 U	0.00066 U	0.00064 U	0.00078 U	0.00078 U	0.00078 U	0.041 U	0.065 U
cis-1,2-Dichloroethene	mg/kg	560	230	0.2	0.00025 U	0.012 U	0.00023 U	0.00021 U	0.00027 U	0.00028 U	0.00026 U	0.00024 U	0.00023 U	0.00028 U	0.00028 U	0.00028 U	0.015 U	0.023 U
trans-1,2-Dichloroethene	mg/kg	720	300	0.4	0.00047 U	0.023 U	0.00043 U	0.0004 U	0.00051 U	0.00053 U	0.00048 U	0.00045 U	0.00043 U	0.00053 U	0.00053 U	0.00053 U	0.028 U	0.044 U
1,2-Dichloropropane	mg/kg	5	2	0.005	0.00014 U	0.0068 U	0.00012 U	0.00012 U	0.00015 U	0.00015 U	0.00014 U	0.00013 U	0.00013 U	0.00015 U	0.00015 U	0.00015 U	0.0081 U	0.013 U
cis-1,3-Dichloropropene	mg/kg	7	2	0.005	0.00014 U	0.0069 U	0.00013 U	0.00012 U	0.00015 U	0.00016 U	0.00014 U	0.00013 U	0.00013 U	0.00016 U	0.00016 U	0.00016 U	0.0082 U	0.013 U
trans-1,3-Dichloropropene	mg/kg	7	2	0.005	0.0001 U	0.005 U	0.000092 U	0.000085 U	0.00011 U	0.00011 U	0.0001 U	0.000096 U	0.000092 U	0.00011 U	0.00011 U	0.00011 U	0.006 U	0.0094 U
1,4-Dioxane	mg/kg	NS	NS	NS	0.091 U	4.5 U	0.083 U	0.077 U	0.098 U	0.1 U	0.093 U	0.087 U	0.083 U	0.1 U	0.1 U	0.1 U	5.4 U	8.4 U
Ethylbenzene	mg/kg	110000	7800	8	0.00039 U	0.019 U	0.00036 U	0.00033 U	0.00042 U	0.00044 U	0.0004 U	0.00037 U	0.00036 U	0.00044 U	0.00044 U	0.00044 U	0.21	0.11
Freon 113	mg/kg	NS	NS	NS	0.00059 U	0.029 U	0.00054 U	0.0005 U	0.00064 U	0.00067 U	0.0006 U	0.00056 U	0.00054 U	0.00066 U	0.00066 U	0.00066 U	0.035 U	0.055 U
2-Hexanone	mg/kg	NS	NS	NS	0.001 U	0.05 U	0.00092 U	0.00086 U	0.0011 U	0.0011 U	0.001 U	0.00096 U	0.00093 U	0.0011 U	0.0011 U	0.0011 U	0.06 U	0.094 U
Isopropylbenzene	mg/kg	NS	NS	NS	0.00055 U	0.027 U	0.0005 U	0.00046 U	0.00059 U	0.00061 U	0.00056 U	0.00052 U	0.0005 U	0.00061 U	0.00061 U	0.0018 J	1.2	0.524
Methyl Acetate	mg/kg	NA	78000	14	0.00087 U	0.123 J	0.00079 U	0.00073 U	0.00093 U	0.00098 U	0.00088 U	0.00082 U	0.00079 U	0.00097 U	0.00097 U	0.00097 U	0.051 U	0.08 U
Methylcyclohexane	mg/kg	NS	NS	NS	0.00069 U	0.034 U	0.00063 U	0.00058 U	0.00074 U	0.00078 U	0.0007 U	0.00066 U	0.00063 U	0.00077 U	0.00077 U	0.0093	16.7	6.85
Methyl Tert Butyl Ether	mg/kg	320	110	0.2	0.0003 U	0.015 U	0.00027 U	0.00025 U	0.00032 U	0.00033 U	0.0003 U	0.00028 U	0.00027 U	0.00033 U	0.00033 U	0.00033 U	0.017 U	0.027 U
4-Methyl-2-pentanone(MIBK)	mg/kg	NS	NS	NS	0.00086 U	0.042 U	0.00078 U	0.00072 U	0.00092 U	0.00096 U	0.00087 U	0.00081 U	0.00078 U	0.00095 U	0.00096 U	0.00095 U	0.05 U	0.079 U
Methylene chloride	mg/kg	97	34	0.007	0.00024 U	0.012 U	0.00021 U	0.0002 U	0.00025 U	0.00026 U	0.00024 U	0.00022 U	0.00021 U	0.00026 U	0.00026 U	0.00026 U	0.014 U	0.022 U
Styrene	mg/kg	260	90	2	0.00011 U	0.0056 U	0.0001 U	0.000095 U	0.00012 U	0.00013 U	0.00012 U	0.00011 U	0.0001 U	0.00013 U	0.00013 U	0.00013 U	0.0066 U	0.01 U
Tert Butyl Alcohol	mg/kg	11000	1400	0.2	0.015 U	0.75 U	0.014 U	0.013 U	0.016 U	0.017 U	0.015 U	0.014 U	0.014 U	0.017 U	0.017 U	0.017 U	0.89 U	1.4 U
1,1,2,2-Tetrachloroethane	mg/kg	3	1	0.005	0.00031 U	0.015 U	0.00028 U	0.00026 U	0.00033 U	0.00035 U	0.00031 U	0.00029 U	0.00028 U	0.00034 U	0.00035 U	0.00034 U	0.018 U	0.029 U
Tetrachloroethene	mg/kg	5	2	0.005	0.00015 U	0.0076 U	0.00014 U	0.00013 U	0.00016 U	0.00017 U	0.00016 U	0.00015 U	0.00014 U	0.00017 U	0.00017 U	0.00017 U	0.009 U	0.014 U
Toluene	mg/kg	91000	6300	4	0.00031 U	0.0264 J	0.00028 U	0.00026 U	0.00033 U	0.00035 U	0.00031 U	0.00029 U	0.00028 U	0.00034 U	0.00034 U	0.00034 U	0.206	0.074 J
1,2,3-Trichlorobenzene	mg/kg	NS	NS	NS	0.00062 U	0.031 U	0.00056 U	0.00052 U	0.00067 U	0.0007 U	0.00063 U	0.00059 U	0.00057 U	0.00069 U	0.0007 U	0.00069 U	0.037 U	0.058 U
1,2,4-Trichlorobenzene	mg/kg	820	73	0.4	0.00036 U	0.018 U	0.00033 U	0.00031 U	0.00039 U	0.00041 U	0.00037 U	0.00035 U	0.00033 U	0.0004 U	0.00041 U	0.00041 U	0.021 U	0.034 U
1,1,1-Trichloroethane	mg/kg	4200	290	0.2	0.00014 U	0.0067 U	0.00012 U	0.00011 U	0.00015 U	0.00015 U	0.00014 U	0.00013 U	0.00012 U	0.00015 U	0.00015 U	0.00015 U	0.0079 U	0.012 U
1,1,2-Trichloroethane	mg/kg	6	2	0.01	0.0002 U	0.0097 U	0.00018 U	0.00016 U	0.00021 U	0.00022 U	0.0002 U	0.00019 U	0.00018 U	0.00022 U	0.00022 U	0.00022 U	0.011 U	0.018 U
Trichloroethene	mg/kg	20	7	0.007	0.00056 U	0.027 U	0.0005 U	0.00047 U	0.0006 U	0.00062 U	0.00057 U	0.00053 U	0.00051 U	0.00062 U	0.00062 U	0.00062 U	0.033 U	0.051 U
Trichlorofluoromethane	mg/kg	340000	23000	22	0.00024 U	0.012 U	0.00022 U	0.0002 U	0.00026 U	0.00027 U	0.00025 U	0.00023 U	0.00022 U	0.00027 U	0.00027 U	0.00027 U	0.014 U	0.022 U
Vinyl chloride	mg/kg	2	0.7	0.005	0.00019 U	0.0093 U	0.00017 U	0.00016 U	0.0002 U	0.00021 U	0.00019 U	0.00018 U	0.00017 U	0.00021 U	0.00021 U	0.00021 U	0.011 U	0.017 U
Xylene (total)	mg/kg	170000	12000	12	0.0005 U	0.055 J	0.00045 U	0.00042 U	0.00053 U	0.00056 U	0.0005 U	0.00047 U	0.00045 U	0.00055 U	0.00055 U	0.00055 U	0.513	0.17 J
VOC Tentatively Identified Compounds (TICs)																		
Total TIC, Volatile	mg/kg	NS	NS	NS	0	13.50	0.0803	0	0	0	0	0	0	0	0	0.057	171	175
General Chemistry																		
Moisture, Percent	%	NS	NS	NS	13.9	14	14.4	16	18.4	27.3	18.4	16.8	14.9	13	9.8	13.3	15.5	10.4

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-2: VOC Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-03	AC-04	AC-04	AC-04	AC-04	AC-04	AC-04	SB-01	SB-01	SB-01	SB-01	SB-01	SB-02	SB-02	SB-02
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	11.2	2.5	2.5	6.0	7.5	9.0	12.0	5.0	12.0	14.0	14.5	19.5	6.0	11.0	13.0
Client Sample ID:					AC-03.11.2-11.2	AC-04.02.5-02.5	DUP-07	AC-04.06.0-06.0	AC-04.07.5-07.5	AC-04.09.0-09.0	AC-04.12.0-12.0	SB-01.05.0-05.0	SB-01.12.0-12.0	SB-01.14.0-14.0	SB-01.14.5-14.5	SB-01.19.5-19.5	SB-02.06.0-06.0	SB-02.11.0-11.0	SB-02.13.0-13.0
Lab Sample ID:					JA74600-12	JA74720-2	JA74720-4	JA74720-6	JA74720-10	JA74720-8	JA74720-12	JA74168-24	JA74168-26	JA74168-28	JA74168-30	JA74168-32	JA74168-14	JA74168-18	JA74168-16
Date Sampled:					4/29/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)																			
Acetone	mg/kg	NS	70000	12	0.14 U	0.0024 U	0.0023 U	0.0022 U	0.0022 U	0.0023 U	0.002 U	0.0024 U	0.0028 U	0.003 U	0.0023 U	0.0164	0.0022 U	0.002 U	0.0023 U
Benzene	mg/kg	5	2	0.005	0.0457 J	0.00036 U	0.00035 U	0.00033 U	0.00034 U	0.00035 U	0.0003 U	0.00036 U	0.00043 U	0.00046 U	0.00036 U	0.00039 U	0.00034 U	0.00031 U	0.00035 U
Bromochloromethane	mg/kg	NS	NS	NS	0.014 U	0.00023 U	0.00023 U	0.00021 U	0.00022 U	0.00023 U	0.00019 U	0.00023 U	0.00028 U	0.00029 U	0.00023 U	0.00025 U	0.00022 U	0.0002 U	0.00023 U
Bromodichloromethane	mg/kg	3	1	0.005	0.016 U	0.00027 U	0.00027 U	0.00025 U	0.00026 U	0.00026 U	0.00023 U	0.00027 U	0.00032 U	0.00034 U	0.00027 U	0.00029 U	0.00025 U	0.00024 U	0.00026 U
Bromoform	mg/kg	280	81	0.02	0.0096 U	0.00016 U	0.00016 U	0.00015 U	0.00015 U	0.00015 U	0.00013 U	0.00016 U	0.00019 U	0.0002 U	0.00016 U	0.00017 U	0.00015 U	0.00014 U	0.00016 U
Bromomethane	mg/kg	59	25	0.03	0.026 U	0.00043 U	0.00042 U	0.00039 U	0.0004 U	0.00041 U	0.00036 U	0.00043 U	0.00051 U	0.00054 U	0.00042 U	0.00046 U	0.0004 U	0.00037 U	0.00041 U
2-Butanone (MEK)	mg/kg	44000	3100	0.6	0.13 U	0.0021 U	0.002 U	0.0019 U	0.002 U	0.002 U	0.0017 U	0.0021 U	0.0025 U	0.0026 U	0.0021 U	0.0022 U	0.002 U	0.0018 U	0.002 U
Carbon disulfide	mg/kg	110000	7800	4	0.019 U	0.00032 U	0.00032 U	0.0003 U	0.00031 U	0.00031 U	0.00027 U	0.00032 U	0.00038 U	0.00041 U	0.00032 U	0.0007 J	0.0003 U	0.00028 U	0.00031 U
Carbon tetrachloride	mg/kg	2	0.6	0.005	0.035 U	0.00059 U	0.00058 U	0.00054 U	0.00056 U	0.00057 U	0.00049 U	0.00059 U	0.0007 U	0.00074 U	0.00058 U	0.00063 U	0.00055 U	0.00051 U	0.00057 U
Chlorobenzene	mg/kg	7400	510	0.4	0.022 U	0.00036 U	0.00035 U	0.00033 U	0.00034 U	0.00035 U	0.0003 U	0.00036 U	0.00043 U	0.00045 U	0.00035 U	0.00038 U	0.00034 U	0.00031 U	0.00035 U
Chloroethane	mg/kg	1100	220	NS	0.064 U	0.0011 U	0.001 U	0.00097 U	0.001 U	0.001 U	0.00088 U	0.0011 U	0.0013 U	0.0013 U	0.001 U	0.0011 U	0.00099 U	0.00092 U	0.001 U
Chloroform	mg/kg	2	0.6	0.2	0.02 U	0.00034 U	0.00033 U	0.00031 U	0.00044 J	0.00071 J	0.00028 U	0.00034 U	0.0004 U	0.00043 U	0.00033 U	0.00036 U	0.00032 U	0.00029 U	0.00033 U
Chloromethane	mg/kg	12	4	NS	0.01 U	0.00017 U	0.00017 U	0.00016 U	0.00017 U	0.00017 U	0.00015 U	0.00017 U	0.00021 U	0.00022 U	0.00017 U	0.00019 U	0.00016 U	0.00015 U	0.00017 U
Cyclohexane	mg/kg	NS	NS	NS	0.258 J	0.00016 U	0.00016 U	0.00015 U	0.00015 U	0.00015 U	0.00013 U	0.00016 U	0.00019 U	0.0002 U	0.00016 U	0.00017 U	0.00015 U	0.00014 U	0.00016 U
1,2-Dibromo-3-chloropropane	mg/kg	0.2	0.08	0.005	0.034 U	0.00057 U	0.00056 U	0.00053 U	0.00054 U	0.00055 U	0.00048 U	0.00057 U	0.00068 U	0.00072 U	0.00057 U	0.00061 U	0.00054 U	0.0005 U	0.00056 U
Dibromochloromethane	mg/kg	8	3	0.005	0.007 U	0.00012 U	0.00011 U	0.00011 U	0.00011 U	0.00011 U	0.000097 U	0.00012 U	0.00014 U	0.00015 U	0.00012 U	0.00012 U	0.00011 U	0.0001 U	0.00011 U
1,2-Dibromoethane	mg/kg	0.04	0.008	0.005	0.0087 U	0.00014 U	0.00014 U	0.00013 U	0.00014 U	0.00014 U	0.00012 U	0.00014 U	0.00017 U	0.00018 U	0.00014 U	0.00016 U	0.00014 U	0.00013 U	0.00014 U
1,2-Dichlorobenzene	mg/kg	59000	5300	11	0.017 U	0.00028 U	0.00028 U	0.00026 U	0.00027 U	0.00028 U	0.00024 U	0.00028 U	0.00034 U	0.00036 U	0.00028 U	0.00031 U	0.00027 U	0.00025 U	0.00028 U
1,3-Dichlorobenzene	mg/kg	59000	5300	12	0.017 U	0.00029 U	0.00028 U	0.00027 U	0.00028 U	0.00028 U	0.00024 U	0.00029 U	0.00035 U	0.00037 U	0.00029 U	0.00031 U	0.00027 U	0.00025 U	0.00028 U
1,4-Dichlorobenzene	mg/kg	13	5	1	0.021 U	0.00036 U	0.00035 U	0.00033 U	0.00034 U	0.00034 U	0.0003 U	0.00036 U	0.00042 U	0.00045 U	0.00035 U	0.00038 U	0.00033 U	0.00031 U	0.00035 U
Dichlorodifluoromethane	mg/kg	230000	490	25	0.06 U	0.001 U	0.00098 U	0.00092 U	0.00095 U	0.00097 U	0.00083 U	0.001 U	0.0012 U	0.0013 U	0.00099 U	0.0011 U	0.00094 U	0.00087 U	0.00097 U
1,1-Dichloroethane	mg/kg	24	8	0.2	0.0088 U	0.00015 U	0.00014 U	0.00013 U	0.00014 U	0.00014 U	0.00012 U	0.00015 U	0.00017 U	0.00018 U	0.00014 U	0.00016 U	0.00014 U	0.00013 U	0.00014 U
1,2-Dichloroethane	mg/kg	3	0.9	0.005	0.022 U	0.00036 U	0.00036 U	0.00034 U	0.00035 U	0.00035 U	0.0003 U	0.00036 U	0.00043 U	0.00046 U	0.00036 U	0.00039 U	0.00034 U	0.00032 U	0.00035 U
1,1-Dichloroethene	mg/kg	150	11	0.005	0.042 U	0.0007 U	0.00069 U	0.00064 U	0.00066 U	0.00068 U	0.00058 U	0.0007 U	0.00083 U	0.00089 U	0.00069 U	0.00075 U	0.00066 U	0.00061 U	0.00068 U
cis-1,2-Dichloroethene	mg/kg	560	230	0.2	0.015 U	0.00025 U	0.00025 U	0.00023 U	0.00024 U	0.00024 U	0.00021 U	0.00025 U	0.0003 U	0.00032 U	0.00025 U	0.00027 U	0.00024 U	0.00022 U	0.00025 U
trans-1,2-Dichloroethene	mg/kg	720	300	0.4	0.029 U	0.00047 U	0.00047 U	0.00044 U	0.00045 U	0.00046 U	0.0004 U	0.00047 U	0.00056 U	0.0006 U	0.00047 U	0.00051 U	0.00045 U	0.00041 U	0.00046 U
1,2-Dichloropropane	mg/kg	5	2	0.005	0.0083 U	0.00014 U	0.00013 U	0.00013 U	0.00013 U	0.00013 U	0.00011 U	0.00014 U	0.00016 U	0.00017 U	0.00014 U	0.00015 U	0.00013 U	0.00012 U	0.00013 U
cis-1,3-Dichloropropene	mg/kg	7	2	0.005	0.0085 U	0.00014 U	0.00014 U	0.00013 U	0.00013 U	0.00014 U	0.00012 U	0.00014 U	0.00017 U	0.00018 U	0.00014 U	0.00015 U	0.00013 U	0.00012 U	0.00014 U
trans-1,3-Dichloropropene	mg/kg	7	2	0.005	0.0061 U	0.0001 U	0.000099 U	0.000093 U	0.000096 U	0.000098 U	0.000085 U	0.0001 U	0.00012 U	0.00013 U	0.0001 U	0.00011 U	0.000095 U	0.000088 U	0.000099 U
1,4-Dioxane	mg/kg	NS	NS	NS	5.5 U	0.091 U	0.09 U	0.084 U	0.086 U	0.088 U	0.076 U	0.091 U	0.11 U	0.12 U	0.09 U	0.098 U	0.086 U	0.079 U	0.089 U
Ethylbenzene	mg/kg	110000	7800	8	0.0704	0.00039 U	0.00038 U	0.00036 U	0.00037 U	0.00038 U	0.00033 U	0.00039 U	0.00047 U	0.0005 U	0.00039 U	0.00042 U	0.00037 U	0.00034 U	0.00038 U
Freon 113	mg/kg	NS	NS	NS	0.036 U	0.00059 U	0.00058 U	0.00055 U	0.00056 U	0.00057 U	0.0005 U	0.00059 U	0.00071 U	0.00075 U	0.00059 U	0.00064 U	0.00056 U	0.00051 U	0.00058 U
2-Hexanone	mg/kg	NS	NS	NS	0.061 U	0.001 U	0.001 U	0.00094 U	0.00096 U	0.00098 U	0.00085 U	0.001 U	0.0012 U	0.0013 U	0.001 U	0.0011 U	0.00095 U	0.00088 U	0.00099 U
Isopropylbenzene	mg/kg	NS	NS	NS	0.244 J	0.00055 U	0.00054 U	0.0005 U	0.00052 U	0.00053 U	0.00046 U	0.00055 U	0.00065 U	0.00069 U	0.00054 U	0.00059 U	0.00051 U	0.00047 U	0.00053 U
Methyl Acetate	mg/kg	NA	78000	14	0.0967 J	0.00087 U	0.00085 U	0.0008 U	0.00082 U	0.00084 U	0.00073 U	0.00087 U	0.001 U	0.0011 U	0.00086 U	0.00093 U	0.00082 U	0.00075 U	0.00085 U
Methylcyclohexane	mg/kg	NS	NS	NS	3.34	0.00069 U	0.00068 U	0.00064 U	0.00065 U	0.00067 U	0.00058 U	0.00069 U	0.00082 U	0.00088 U	0.00068 U	0.00074 U	0.00065 U	0.0006 U	0.00067 U
Methyl Tert Butyl Ether	mg/kg	320	110	0.2	0.018 U	0.0003 U	0.00029 U	0.00027 U	0.00028 U	0.00029 U	0.00025 U	0.0003 U	0.00035 U	0.00038 U	0.0003 U	0.00032 U	0.00028 U	0.00026 U	0.00029 U
4-Methyl-2-pentanone(MIBK)	mg/kg	NS	NS	NS	0.052 U	0.00086 U	0.00084 U	0.00079 U	0.00081 U	0.00083 U	0.00072 U	0.00086 U	0.001 U	0.0011 U	0.00085 U	0.00092 U	0.0008 U	0.00074 U	0.00083 U
Methylene chloride	mg/kg	97	34	0.007	0.014 U	0.00024 U	0.00023 U	0.00022 U	0.00022 U	0.00023 U	0.0002 U	0.00024 U	0.00028 U	0.0003 U	0.00023 U	0.00025 U	0.00022 U	0.0002 U	0.00023 U
Styrene	mg/kg	260	90	2	0.0068 U	0.00011 U	0.00011 U	0.0001 U	0.00011 U	0.00011 U	0.000094 U	0.00011 U	0.00013 U	0.00014 U	0.00011 U	0.00012 U	0.00011 U	0.000098 U	0.00011 U
Tert Butyl Alcohol	mg/kg	11000	1400	0.2	0.92 U	0.015 U	0.015 U	0.014 U	0.014 U	0.015 U	0.013 U	0.015 U	0.018 U	0.019 U	0.015 U	0.016 U	0.014 U	0.013 U	0.015 U
1,1,2,2-Tetrachloroethane	mg/kg	3	1	0.005	0.019 U	0.00031 U	0.0003 U	0.00028 U	0.00029 U	0.0003 U	0.00026 U	0.00031 U	0.00037 U	0.00039 U	0.00031 U	0.00033 U	0.00029 U	0.00027 U	0.0003 U
Tetrachloroethene	mg/kg	5	2	0.005	0.0092 U	0.00015 U	0.00015 U	0.00014 U	0.00015 U	0.00015 U	0.00013 U	0.00015 U	0.00018 U	0.00019 U	0.00015 U	0.00016 U	0.00014 U	0.00013 U	0.00015 U
Toluene	mg/kg	91000	6300	4	0.0484 J	0.00031 U	0.0003 U	0.00028 U	0.00029 U	0.0003 U	0.00026 U	0.00031 U	0.00037 U	0.00039 U	0.00031 U	0.00033 U	0.00029 U	0.00027 U	0.0003 U
1,2,3-Trichlorobenzene	mg/kg	NS	NS	NS	0.037 U	0.00062 U	0.00061 U	0.00057 U	0.00059 U	0.0006 U	0.00052 U	0.00062 U	0.00074 U	0.00079 U	0.00062 U	0.00067 U	0.00058 U	0.00054 U	0.00061 U
1,2,4-Trichlorobenzene	mg/kg	820	73	0.4	0.022 U	0.00036 U	0.00036 U	0.00034 U	0.00035 U	0.00035 U	0.0003 U	0.00036 U	0.00043 U	0.00046 U	0.00036 U	0.00039 U	0.00034 U	0.00032 U	0.00035 U
1,1,1-Trichloroethane	mg/kg	4200	290	0.2	0.0081 U	0.00013 U	0.00013 U	0.00012 U	0.00013 U	0.00013 U	0.00011 U	0.00014 U	0.00016 U	0.00017 U	0.00013 U	0.00015 U	0.00013 U	0.00012 U	0.00013 U
1,1,2-Trichloroethane	mg/kg	6	2	0.01	0.012 U	0.0002 U	0.00019 U	0.00018 U	0.00019 U	0.00019 U	0.00016 U	0.0002 U	0.00023 U	0.00025 U	0.00019 U	0.00021 U	0.00018 U	0.00017 U	0.00019 U
Trichloroethene	mg/kg	20	7	0.007	0.033 U	0.00055 U	0.00055 U	0.00051 U	0.00053 U	0.00054 U	0.00046 U	0.00056 U	0.00066 U	0.0007 U	0.00055 U	0.0006 U	0.00052 U	0.00048 U	0.00054 U
Trichlorofluoromethane	mg/kg	340000	23000	22	0.015 U	0.00024 U	0.00024 U	0.00022 U	0.00023 U	0.00023 U	0.0002 U	0.00024 U	0.00029 U	0.00031 U	0.00024 U	0.00026 U	0.00023 U	0.00021 U	0.00024 U
Vinyl chloride	mg/kg	2	0.7	0.005	0.011 U	0.00019 U	0.00018 U	0.00017 U	0.00018 U	0.00018 U	0.00016 U	0.00019 U	0.00022 U	0.00024 U	0.00019 U	0.0002 U	0.00018 U	0.00016 U	0.00018 U
Xylene (total)	mg/kg	170000	12000	12	0.105 J	0.00049 U	0.00049 U	0.00046 U	0.00047 U	0.00048 U	0.00041 U	0.0005 U	0.00059 U	0.00063 U	0.00049 U	0.00053 U	0.00046 U	0.00043 U	0.00048 U
VOC Tentatively Identified Compounds (TICs)																			
Total TIC, Volatile	mg/kg	NS	NS	NS	65	0.636	0.448	0	0	0	0	0	0	0.626	0	0	0	0	0
General Chemistry																			
Moisture, Percent	%	NS	NS	NS	8.1	13.8	7.2	12.8	13.8	12.7	11.5	8.9	9.5	20.5	16.2	21.2	8.3	13.3	14.6

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-2: VOC Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-02	SB-02	SB-03	SB-03	SB-03	SB-03	SB-03	SB-03	SB-04	SB-04	SB-04	SB-04	SB-04	SB-04	SB-05
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	14.0	20.0	5.5	12.0	13.0	18.0	18.0	19.0	5.5	6.0	7.5	9.0	14.0	17.5	8.0
Client Sample ID:					SB-02.14.0-14.0	SB-02.20.0-20.0	SB-03.05.5-05.5	SB-03.12.0-12.0	SB-03.13.0-13.0	SB-03.18.0-18.0	DUP-01	SB-03.19.0-19.0	SB-05.05.5-05.5	SB-04.06.0-06.0	SB-04.07.5-07.5	SB-04.09.0-09.0	SB-04.14.0-14.0	SB-04.17.5-17.5	SB-05.08.0-08.0
Lab Sample ID:					JA74168-20	JA74168-22	JA74168-2	JA74168-4	JA74168-6	JA74168-8	JA74168-10	JA74168-12	JA75102-2	JA75102-14	JA75102-16	JA75102-18	JA75102-20	JA75102-22	JA75102-4
Date Sampled:					4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)																			
Acetone	mg/kg	NS	70000	12	0.0022 U	0.0023 U	0.0022 U	0.0021 U	0.0021 U	0.0021 U	0.0026 U	0.0021 U	0.0109 J	0.0022 U	0.0896	0.0026 U	0.0387	0.0023 U	0.0075 J
Benzene	mg/kg	5	2	0.005	0.00033 U	0.00035 U	0.00034 U	0.00032 U	0.00032 U	0.00032 U	0.0004 U	0.00033 U	0.00043 U	0.00034 U	0.00056 U	0.0004 U	0.00067 U	0.00036 U	0.00042 U
Bromochloromethane	mg/kg	NS	NS	NS	0.00021 U	0.00022 U	0.00022 U	0.00021 U	0.00021 U	0.00021 U	0.00026 U	0.00021 U	0.00028 U	0.00022 U	0.00036 U	0.00026 U	0.00043 U	0.00023 U	0.00027 U
Bromodichloromethane	mg/kg	3	1	0.005	0.00025 U	0.00026 U	0.00025 U	0.00024 U	0.00024 U	0.00024 U	0.0003 U	0.00024 U	0.00032 U	0.00026 U	0.00042 U	0.0003 U	0.0005 U	0.00027 U	0.00032 U
Bromoform	mg/kg	280	81	0.02	0.00015 U	0.00015 U	0.00015 U	0.00014 U	0.00014 U	0.00014 U	0.00018 U	0.00014 U	0.00019 U	0.00015 U	0.00025 U	0.00018 U	0.0003 U	0.00016 U	0.00019 U
Bromomethane	mg/kg	59	25	0.03	0.00039 U	0.00041 U	0.0004 U	0.00038 U	0.00038 U	0.00038 U	0.00048 U	0.00039 U	0.00051 U	0.0004 U	0.00066 U	0.00047 U	0.00079 U	0.00042 U	0.0005 U
2-Butanone (MEK)	mg/kg	44000	3100	0.6	0.0019 U	0.002 U	0.0019 U	0.0018 U	0.0019 U	0.0019 U	0.0023 U	0.0019 U	0.0025 U	0.002 U	0.0032 U	0.0023 U	0.0039 U	0.0021 U	0.0024 U
Carbon disulfide	mg/kg	110000	7800	4	0.0003 U	0.00031 U	0.0003 U	0.00029 U	0.00029 U	0.00029 U	0.00036 U	0.00029 U	0.00038 U	0.00031 U	0.0005 U	0.00036 U	0.0013 J	0.00032 U	0.00086 J
Carbon tetrachloride	mg/kg	2	0.6	0.005	0.00054 U	0.00057 U	0.00055 U	0.00052 U	0.00052 U	0.00052 U	0.00065 U	0.00053 U	0.0007 U	0.00056 U	0.00091 U	0.00065 U	0.0011 U	0.00058 U	0.00068 U
Chlorobenzene	mg/kg	7400	510	0.4	0.00033 U	0.00035 U	0.00033 U	0.00032 U	0.00032 U	0.00032 U	0.0004 U	0.00032 U	0.00043 U	0.00034 U	0.00056 U	0.0004 U	0.00067 U	0.00035 U	0.00042 U
Chloroethane	mg/kg	1100	220	NS	0.00097 U	0.001 U	0.00098 U	0.00094 U	0.00094 U	0.00094 U	0.0012 U	0.00095 U	0.0013 U	0.001 U	0.0016 U	0.0012 U	0.002 U	0.001 U	0.0012 U
Chloroform	mg/kg	2	0.6	0.2	0.00031 U	0.00032 U	0.00031 U	0.0003 U	0.0003 U	0.0003 U	0.00037 U	0.0003 U	0.0004 U	0.00032 U	0.00052 U	0.00037 U	0.00062 U	0.00033 U	0.00039 U
Chloromethane	mg/kg	12	4	NS	0.00016 U	0.00017 U	0.00016 U	0.00015 U	0.00016 U	0.00016 U	0.00019 U	0.00016 U	0.00021 U	0.00017 U	0.00027 U	0.00019 U	0.00032 U	0.00017 U	0.0002 U
Cyclohexane	mg/kg	NS	NS	NS	0.00015 U	0.00015 U	0.00015 U	0.00014 U	0.00014 U	0.00014 U	0.00018 U	0.0026 J	0.00019 U	0.00015 U	0.00025 U	0.00018 U	0.0003 U	0.00016 U	0.0022 J
1,2-Dibromo-3-chloropropane	mg/kg	0.2	0.08	0.005	0.00053 U	0.00055 U	0.00053 U	0.00051 U	0.00051 U	0.00051 U	0.00064 U	0.00052 U	0.00068 U	0.00054 U	0.00089 U	0.00063 U	0.0011 U	0.00057 U	0.00067 U
Dibromochloromethane	mg/kg	8	3	0.005	0.00011 U	0.00011 U	0.00011 U	0.0001 U	0.0001 U	0.0001 U	0.00013 U	0.0001 U	0.00014 U	0.00011 U	0.00018 U	0.00013 U	0.00022 U	0.00012 U	0.00014 U
1,2-Dibromoethane	mg/kg	0.04	0.008	0.005	0.00013 U	0.00014 U	0.00013 U	0.00013 U	0.00013 U	0.00013 U	0.00016 U	0.00013 U	0.00017 U	0.00014 U	0.00023 U	0.00016 U	0.00027 U	0.00014 U	0.00017 U
1,2-Dichlorobenzene	mg/kg	59000	5300	11	0.00026 U	0.00028 U	0.00027 U	0.00025 U	0.00025 U	0.00025 U	0.00032 U	0.00026 U	0.00034 U	0.00027 U	0.00044 U	0.00032 U	0.00053 U	0.00028 U	0.00033 U
1,3-Dichlorobenzene	mg/kg	59000	5300	12	0.00027 U	0.00028 U	0.00027 U	0.00026 U	0.00026 U	0.00026 U	0.00032 U	0.00026 U	0.00035 U	0.00028 U	0.00045 U	0.00032 U	0.00054 U	0.00029 U	0.00034 U
1,4-Dichlorobenzene	mg/kg	13	5	1	0.00033 U	0.00034 U	0.00033 U	0.00032 U	0.00032 U	0.00032 U	0.0004 U	0.00032 U	0.00043 U	0.00034 U	0.00055 U	0.0004 U	0.00066 U	0.00035 U	0.00042 U
Dichlorodifluoromethane	mg/kg	230000	490	25	0.00092 U	0.00096 U	0.00093 U	0.00088 U	0.00089 U	0.00089 U	0.0011 U	0.0009 U	0.0012 U	0.00095 U	0.0016 U	0.0011 U	0.0019 U	0.00099 U	0.0012 U
1,1-Dichloroethane	mg/kg	24	8	0.2	0.00013 U	0.00014 U	0.00014 U	0.00013 U	0.00013 U	0.00013 U	0.00016 U	0.00013 U	0.00017 U	0.00014 U	0.00023 U	0.00016 U	0.00027 U	0.00014 U	0.00017 U
1,2-Dichloroethane	mg/kg	3	0.9	0.005	0.00034 U	0.00035 U	0.00034 U	0.00032 U	0.00033 U	0.00033 U	0.00041 U	0.00033 U	0.00044 U	0.00035 U	0.00057 U	0.0004 U	0.00068 U	0.00036 U	0.00043 U
1,1-Dichloroethene	mg/kg	150	11	0.005	0.00065 U	0.00068 U	0.00065 U	0.00062 U	0.00063 U	0.00062 U	0.00078 U	0.00063 U	0.00083 U	0.00066 U	0.0011 U	0.00078 U	0.0013 U	0.00069 U	0.00082 U
cis-1,2-Dichloroethene	mg/kg	560	230	0.2	0.00023 U	0.00024 U	0.00024 U	0.00022 U	0.00023 U	0.00023 U	0.00028 U	0.00023 U	0.0003 U	0.00024 U	0.00039 U	0.00028 U	0.00047 U	0.00025 U	0.00029 U
trans-1,2-Dichloroethene	mg/kg	720	300	0.4	0.00044 U	0.00046 U	0.00044 U	0.00042 U	0.00042 U	0.00042 U	0.00053 U	0.00043 U	0.00057 U	0.00045 U	0.00074 U	0.00053 U	0.00088 U	0.00047 U	0.00055 U
1,2-Dichloropropane	mg/kg	5	2	0.005	0.00013 U	0.00013 U	0.00013 U	0.00012 U	0.00012 U	0.00012 U	0.00015 U	0.00012 U	0.00016 U	0.00013 U	0.00021 U	0.00015 U	0.00026 U	0.00014 U	0.00016 U
cis-1,3-Dichloropropene	mg/kg	7	2	0.005	0.00013 U	0.00014 U	0.00013 U	0.00012 U	0.00013 U	0.00013 U	0.00016 U	0.00013 U	0.00017 U	0.00013 U	0.00022 U	0.00016 U	0.00026 U	0.00014 U	0.00016 U
trans-1,3-Dichloropropene	mg/kg	7	2	0.005	0.000094 U	0.000098 U	0.000094 U	0.00009 U	0.000091 U	0.000091 U	0.00011 U	0.000092 U	0.00012 U	0.000096 U	0.00016 U	0.00011 U	0.00019 U	0.0001 U	0.00012 U
1,4-Dioxane	mg/kg	NS	NS	NS	0.084 U	0.088 U	0.085 U	0.081 U	0.082 U	0.081 U	0.1 U	0.082 U	0.11 U	0.086 U	0.14 U	0.1 U	0.17 U	0.09 U	0.11 U
Ethylbenzene	mg/kg	110000	7800	8	0.00036 U	0.00038 U	0.00037 U	0.00035 U	0.00035 U	0.00035 U	0.00044 U	0.00035 U	0.00047 U	0.00037 U	0.00061 U	0.00044 U	0.00073 U	0.00039 U	0.00046 U
Freon 113	mg/kg	NS	NS	NS	0.00055 U	0.00057 U	0.00055 U	0.00053 U	0.00053 U	0.00053 U	0.00066 U	0.00054 U	0.00071 U	0.00056 U	0.00092 U	0.00066 U	0.0011 U	0.00059 U	0.00069 U
2-Hexanone	mg/kg	NS	NS	NS	0.00094 U	0.00098 U	0.00095 U	0.0009 U	0.00091 U	0.00091 U	0.0011 U	0.00092 U	0.0012 U	0.00096 U	0.0016 U	0.0011 U	0.0019 U	0.001 U	0.0012 U
Isopropylbenzene	mg/kg	NS	NS	NS	0.0005 U	0.00053 U	0.00051 U	0.00048 U	0.00049 U	0.00049 U	0.00061 U	0.00049 U	0.00065 U	0.00052 U	0.00085 U	0.00061 U	0.001 U	0.00054 U	0.00064 U
Methyl Acetate	mg/kg	NA	78000	14	0.0008 U	0.00084 U	0.00081 U	0.00077 U	0.00078 U	0.00078 U	0.00097 U	0.00078 U	0.001 U	0.00082 U	0.0014 U	0.00097 U	0.0016 U	0.00086 U	0.001 U
Methylcyclohexane	mg/kg	NS	NS	NS	0.00064 U	0.00067 U	0.00064 U	0.00061 U	0.00062 U	0.00062 U	0.00077 U	0.00062 U	0.00082 U	0.00065 U	0.0011 U	0.00077 U	0.0013 U	0.00068 U	0.0027 J
Methyl Tert Butyl Ether	mg/kg	320	110	0.2	0.00027 U	0.00029 U	0.00028 U	0.00026 U	0.00027 U	0.00027 U	0.00033 U	0.00027 U	0.00036 U	0.00028 U	0.00046 U	0.00033 U	0.00055 U	0.0003 U	0.00035 U
4-Methyl-2-pentanone(MIBK)	mg/kg	NS	NS	NS	0.00079 U	0.00083 U	0.0008 U	0.00076 U	0.00077 U	0.00076 U	0.00096 U	0.00077 U	0.001 U	0.00081 U	0.0013 U	0.00095 U	0.0016 U	0.00085 U	0.001 U
Methylene chloride	mg/kg	97	34	0.007	0.00022 U	0.00023 U	0.00022 U	0.00021 U	0.00021 U	0.00021 U	0.00026 U	0.00021 U	0.00028 U	0.00022 U	0.00037 U	0.00026 U	0.00044 U	0.00023 U	0.00027 U
Styrene	mg/kg	260	90	2	0.0001 U	0.00011 U	0.00011 U	0.0001 U	0.0001 U	0.0001 U	0.00013 U	0.0001 U	0.00013 U	0.00011 U	0.00018 U	0.00013 U	0.00021 U	0.00011 U	0.00013 U
Tert Butyl Alcohol	mg/kg	11000	1400	0.2	0.014 U	0.015 U	0.014 U	0.013 U	0.014 U	0.014 U	0.017 U	0.014 U	0.018 U	0.014 U	0.024 U	0.017 U	0.028 U	0.015 U	0.018 U
1,1,2,2-Tetrachloroethane	mg/kg	3	1	0.005	0.00029 U	0.0003 U	0.00029 U	0.00027 U	0.00028 U	0.00028 U	0.00035 U	0.00028 U	0.00037 U	0.00029 U	0.00048 U	0.00034 U	0.00058 U	0.00031 U	0.00036 U
Tetrachloroethene	mg/kg	5	2	0.005	0.00014 U	0.00015 U	0.00014 U	0.00014 U	0.00014 U	0.00014 U	0.00017 U	0.00014 U	0.00018 U	0.00015 U	0.00024 U	0.00017 U	0.00028 U	0.00015 U	0.00018 U
Toluene	mg/kg	91000	6300	4	0.00028 U	0.0003 U	0.00029 U	0.00027 U	0.00028 U	0.00028 U	0.00034 U	0.00028 U	0.00037 U	0.00029 U	0.00048 U	0.00034 U	0.00057 U	0.00031 U	0.00036 U
1,2,3-Trichlorobenzene	mg/kg	NS	NS	NS	0.00058 U	0.0006 U	0.00058 U	0.00055 U	0.00056 U	0.00056 U	0.0007 U	0.00056 U	0.00074 U	0.00059 U	0.00097 U	0.00069 U	0.0012 U	0.00062 U	0.00073 U
1,2,4-Trichlorobenzene	mg/kg	820	73	0.4	0.00034 U	0.00035 U	0.00034 U	0.00032 U	0.00033 U	0.00033 U	0.00041 U	0.00033 U	0.00044 U	0.00035 U	0.00057 U	0.0004 U	0.00068 U	0.00036 U	0.00043 U
1,1,1-Trichloroethane	mg/kg	4200	290	0.2	0.00012 U	0.00013 U	0.00013 U	0.00012 U	0.00012 U	0.00012 U	0.00015 U	0.00012 U	0.00016 U	0.00013 U	0.00021 U	0.00015 U	0.00025 U	0.00013 U	0.00016 U
1,1,2-Trichloroethane	mg/kg	6	2	0.01	0.00018 U	0.00019 U	0.00018 U	0.00017 U	0.00017 U	0.00017 U	0.00022 U	0.00018 U	0.00023 U	0.00019 U	0.0003 U	0.00022 U	0.00036 U	0.00019 U	0.00023 U
Trichloroethene	mg/kg	20	7	0.007	0.00051 U	0.00054 U	0.00052 U	0.00049 U	0.0005 U	0.0005 U	0.00062 U	0.0005 U	0.00066 U	0.00053 U	0.00087 U	0.00062 U	0.001 U	0.00055 U	0.00065 U
Trichlorofluoromethane	mg/kg	340000	23000	22	0.00022 U	0.00023 U	0.00023 U	0.00021 U	0.00022 U	0.00022 U	0.00027 U	0.00022 U	0.00029 U	0.00023 U	0.00038 U	0.00027 U	0.00045 U	0.00024 U	0.00028 U
Vinyl chloride	mg/kg	2	0.7	0.005	0.00017 U	0.00018 U	0.00018 U	0.00017 U	0.00017 U	0.00017 U	0.00021 U	0.00017 U	0.00022 U	0.00018 U	0.00029 U	0.00021 U	0.00035 U	0.00019 U	0.00022 U
Xylene (total)	mg/kg	170000	12000	12	0.00046 U	0.00048 U	0.00046 U	0.00044 U	0.00044 U	0.00044 U	0.00055 U	0.00045 U	0.00059 U	0.00047 U	0.00077 U	0.00055 U	0.00092 U	0.00049 U	0.00058 U
VOC Tentatively Identified Compounds (TICs)																			
Total TIC, Volatile	mg/kg	NS	NS	NS	0	0	0	0	0	0	0	0.0669	0	0	0	0	0	0	0
General Chemistry																			
Moisture, Percent	%	NS	NS	NS	14.5	12.5	12.4	12.4	14.6	14.5	31.6	15.4	25.2	10.8	30.9	14.8	45.8	16.2	13.7

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-2: VOC Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-05	SB-05	SB-05	SB-05
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	8.0	9.0	12.5	15.0
Client Sample ID:					DUP-09	SB-05.09.0-09.0	SB-05.12.5-12.5	SB-05.15.0-15.0
Lab Sample ID:					JA75102-6	JA75102-8	JA75102-10	JA75102-12
Date Sampled:					5/5/2011	5/5/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)								
Acetone	mg/kg	NS	70000	12	0.0214	0.0112	0.003 U	0.0021 U
Benzene	mg/kg	5	2	0.005	0.00035 U	0.00036 U	0.00046 U	0.00032 U
Bromochloromethane	mg/kg	NS	NS	NS	0.00022 U	0.00023 U	0.0003 U	0.00021 U
Bromodichloromethane	mg/kg	3	1	0.005	0.00026 U	0.00027 U	0.00035 U	0.00024 U
Bromoform	mg/kg	280	81	0.02	0.00015 U	0.00016 U	0.0002 U	0.00014 U
Bromomethane	mg/kg	59	25	0.03	0.00041 U	0.00042 U	0.00055 U	0.00038 U
2-Butanone (MEK)	mg/kg	44000	3100	0.6	0.002 U	0.0021 U	0.0027 U	0.0018 U
Carbon disulfide	mg/kg	110000	7800	4	0.00031 U	0.00032 U	0.0014 J	0.00029 U
Carbon tetrachloride	mg/kg	2	0.6	0.005	0.00056 U	0.00058 U	0.00075 U	0.00052 U
Chlorobenzene	mg/kg	7400	510	0.4	0.00034 U	0.00035 U	0.00046 U	0.00032 U
Chloroethane	mg/kg	1100	220	NS	0.001 U	0.001 U	0.0014 U	0.00094 U
Chloroform	mg/kg	2	0.6	0.2	0.00032 U	0.00033 U	0.00043 U	0.0003 U
Chloromethane	mg/kg	12	4	NS	0.00017 U	0.00017 U	0.00022 U	0.00015 U
Cyclohexane	mg/kg	NS	NS	NS	0.00015 U	0.00016 U	0.0002 U	0.00014 U
1,2-Dibromo-3-chloropropane	mg/kg	0.2	0.08	0.005	0.00055 U	0.00057 U	0.00073 U	0.00051 U
Dibromochloromethane	mg/kg	8	3	0.005	0.00011 U	0.00011 U	0.00015 U	0.0001 U
1,2-Dibromoethane	mg/kg	0.04	0.008	0.005	0.00014 U	0.00014 U	0.00019 U	0.00013 U
1,2-Dichlorobenzene	mg/kg	59000	5300	11	0.00027 U	0.00028 U	0.00037 U	0.00025 U
1,3-Dichlorobenzene	mg/kg	59000	5300	12	0.00028 U	0.00029 U	0.00037 U	0.00026 U
1,4-Dichlorobenzene	mg/kg	13	5	1	0.00034 U	0.00035 U	0.00046 U	0.00032 U
Dichlorodifluoromethane	mg/kg	230000	490	25	0.00096 U	0.00099 U	0.0013 U	0.00088 U
1,1-Dichloroethane	mg/kg	24	8	0.2	0.00014 U	0.00014 U	0.00019 U	0.00013 U
1,2-Dichloroethane	mg/kg	3	0.9	0.005	0.00035 U	0.00036 U	0.00047 U	0.00032 U
1,1-Dichloroethene	mg/kg	150	11	0.005	0.00067 U	0.00069 U	0.0009 U	0.00062 U
cis-1,2-Dichloroethene	mg/kg	560	230	0.2	0.00024 U	0.00025 U	0.00032 U	0.00022 U
trans-1,2-Dichloroethene	mg/kg	720	300	0.4	0.00046 U	0.00047 U	0.00061 U	0.00042 U
1,2-Dichloropropane	mg/kg	5	2	0.005	0.00013 U	0.00014 U	0.00018 U	0.00012 U
cis-1,3-Dichloropropene	mg/kg	7	2	0.005	0.00014 U	0.00014 U	0.00018 U	0.00012 U
trans-1,3-Dichloropropene	mg/kg	7	2	0.005	0.000098 U	0.0001 U	0.00013 U	0.00009 U
1,4-Dioxane	mg/kg	NS	NS	NS	0.088 U	0.09 U	0.12 U	0.081 U
Ethylbenzene	mg/kg	110000	7800	8	0.00038 U	0.00039 U	0.0005 U	0.00035 U
Freon 113	mg/kg	NS	NS	NS	0.00057 U	0.00059 U	0.00076 U	0.00053 U
2-Hexanone	mg/kg	NS	NS	NS	0.00098 U	0.001 U	0.0013 U	0.0009 U
Isopropylbenzene	mg/kg	NS	NS	NS	0.00053 U	0.00054 U	0.0007 U	0.00048 U
Methyl Acetate	mg/kg	NA	78000	14	0.00084 U	0.00086 U	0.0011 U	0.00077 U
Methylcyclohexane	mg/kg	NS	NS	NS	0.00066 U	0.00068 U	0.00088 U	0.00061 U
Methyl Tert Butyl Ether	mg/kg	320	110	0.2	0.00029 U	0.00029 U	0.00038 U	0.00026 U
4-Methyl-2-pentanone(MIBK)	mg/kg	NS	NS	NS	0.00082 U	0.00085 U	0.0011 U	0.00076 U
Methylene chloride	mg/kg	97	34	0.007	0.00023 U	0.00023 U	0.0003 U	0.00021 U
Styrene	mg/kg	260	90	2	0.00011 U	0.00011 U	0.00014 U	0.0001 U
Tert Butyl Alcohol	mg/kg	11000	1400	0.2	0.015 U	0.015 U	0.019 U	0.013 U
1,1,2,2-Tetrachloroethane	mg/kg	3	1	0.005	0.0003 U	0.00031 U	0.0004 U	0.00027 U
Tetrachloroethene	mg/kg	5	2	0.005	0.00015 U	0.00015 U	0.0002 U	0.00014 U
Toluene	mg/kg	91000	6300	4	0.0003 U	0.00031 U	0.0004 U	0.00027 U
1,2,3-Trichlorobenzene	mg/kg	NS	NS	NS	0.0006 U	0.00062 U	0.0008 U	0.00055 U
1,2,4-Trichlorobenzene	mg/kg	820	73	0.4	0.00035 U	0.00036 U	0.00047 U	0.00032 U
1,1,1-Trichloroethane	mg/kg	4200	290	0.2	0.00013 U	0.00013 U	0.00017 U	0.00012 U
1,1,2-Trichloroethane	mg/kg	6	2	0.01	0.00019 U	0.00019 U	0.00025 U	0.00017 U
Trichloroethene	mg/kg	20	7	0.007	0.00053 U	0.00055 U	0.00071 U	0.00049 U
Trichlorofluoromethane	mg/kg	340000	23000	22	0.00023 U	0.00024 U	0.00031 U	0.00021 U
Vinyl chloride	mg/kg	2	0.7	0.005	0.00018 U	0.00019 U	0.00024 U	0.00017 U
Xylene (total)	mg/kg	170000	12000	12	0.00048 U	0.00049 U	0.00063 U	0.00044 U
VOC Tentatively Identified Compounds (TICs)								
Total TIC, Volatile	mg/kg	NS	NS	NS	0	0	0	0
General Chemistry								
Moisture, Percent	%	NS	NS	NS	10.5	17.5	32.8	12.4

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-3: SVOC Soil Analytical Results
USACE Assunpink Creak Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-01	AC-01	AC-01	AC-01	AC-02	AC-02	AC-02	AC-02	AC-02	AC-02	AC-03	AC-03	AC-03	AC-03	AC-03	AC-04	AC-04	AC-04
Sample Depth Interval (ft bgs)					7.5 - 8.0	14.0 - 14.5	18.0 - 20.0	18.0 - 20.0	6.0 - 8.0	8.5 - 9.0	12.0 - 12.5	15.0 - 15.5	17.5 - 18.0	17.5 - 18.0	5.5 - 6.0	6.0 - 8.0	9.0 - 9.5	10.0 - 11.0	10.0 - 11.0	2.5 - 3.0	5.5 - 6.0	7.5 - 8.0
Client Sample ID:		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	AC-01.07.5-08.0	AC-01.14.0-14.5	AC-01.18.0-20.0	DUP-04	AC-02. 06.0-08.0	AC-02. 08.5-09.0	AC-02. 12.0-12.5	AC-02. 15.0-15.5	AC-02. 17.5-18.0	DUP-10	AC-03.05.5-06.0	AC-03.06.0-08.0	AC-03.09.0-09.5	AC-03.10.0-11.0	DUP-06	AC-04.02.5-03.0	AC-04.05.5-06.0	AC-04.07.5-08.0
Lab Sample ID:					JA74273-4	JA74273-6	JA74273-8	JA74273-10	JA74821-3	JA74821-5	JA74821-7	JA74821-9	JA74821-11	JA75102-7	JA74600-3	JA74600-7	JA74600-9	JA74600-11	JA74600-5	JA74720-3	JA74720-7	JA74720-11
Date Sampled:					4/27/2011	4/27/2011	4/27/2011	4/27/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/5/2011	4/29/2011	4/29/2011	4/29/2011	4/29/2011	4/29/2011	5/2/2011	5/2/2011	5/2/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Semi-Volatile Organic Compounds (SVOCs)																						
2-Chlorophenol	mg/kg	2200	310	0.5	0.034 U	0.035 U	0.034 U	0.034 U	0.034 U	0.035 U	0.036 U	0.034 U	0.034 U	0.032 U	0.032 U	0.029 U	0.033 U	0.033 U	0.032 U	0.032 U	0.032 U	0.031 U
4-Chloro-3-methyl phenol	mg/kg	NS	NS	NS	0.033 U	0.035 U	0.034 U	0.033 U	0.033 U	0.034 U	0.035 U	0.034 U	0.034 U	0.031 U	0.031 U	0.029 U	0.033 U	0.033 U	0.032 U	0.032 U	0.032 U	0.031 U
2,4-Dichlorophenol	mg/kg	2100	180	0.2	0.054 U	0.056 U	0.054 U	0.054 U	0.054 U	0.055 U	0.057 U	0.055 U	0.055 U	0.051 U	0.051 U	0.046 U	0.052 U	0.053 U	0.051 U	0.051 U	0.052 U	0.05 U
2,4-Dimethylphenol	mg/kg	14000	1200	0.7	0.056 U	0.059 U	0.057 U	0.056 U	0.056 U	0.058 U	0.059 U	0.057 U	0.057 U	0.053 U	0.053 U	0.048 U	0.055 U	0.055 U	0.053 U	0.053 U	0.054 U	0.052 U
2,4-Dinitrophenol	mg/kg	1400	120	0.3	0.041 U	0.042 U	0.041 U	0.041 U	0.041 U	0.042 U	0.043 U	0.042 U	0.042 U	0.038 U	0.038 U	0.035 U	0.04 U	0.04 U	0.039 U	0.038 U	0.039 U	0.038 U
4,6-Dinitro-o-cresol	mg/kg	68	6	0.3	0.041 U	0.042 U	0.041 U	0.041 U	0.041 U	0.042 U	0.043 U	0.042 U	0.042 U	0.038 U	0.038 U	0.035 U	0.04 U	0.04 U	0.039 U	0.038 U	0.039 U	0.038 U
2-Methylphenol	mg/kg	3400	310	NS	0.038 U	0.04 U	0.038 U	0.038 U	0.038 U	0.039 U	0.04 U	0.039 U	0.039 U	0.036 U	0.036 U	0.033 U	0.037 U	0.037 U	0.036 U	0.036 U	0.037 U	0.035 U
3&4-Methylphenol	mg/kg	NS	NS	NS	0.042 U	0.044 U	0.043 U	0.043 U	0.043 U	0.044 U	0.045 U	0.043 U	0.043 U	0.04 U	0.04 U	0.036 U	0.041 U	0.042 U	0.04 U	0.04 U	0.041 U	0.039 U
2-Nitrophenol	mg/kg	NS	NS	NS	0.035 U	0.037 U	0.036 U	0.035 U	0.036 U	0.036 U	0.038 U	0.036 U	0.036 U	0.033 U	0.033 U	0.03 U	0.034 U	0.035 U	0.034 U	0.033 U	0.034 U	0.033 U
4-Nitrophenol	mg/kg	NS	NS	NS	0.056 U	0.059 U	0.057 U	0.057 U	0.057 U	0.058 U	0.06 U	0.058 U	0.058 U	0.053 U	0.053 U	0.048 U	0.055 U	0.056 U	0.054 U	0.053 U	0.054 U	0.052 U
Pentachlorophenol	mg/kg	10	3	0.3	0.057 U	0.06 U	0.058 U	0.057 U	0.057 U	0.059 U	0.061 U	0.058 U	0.058 U	0.054 U	0.054 U	0.049 U	0.056 U	0.056 U	0.054 U	0.054 U	0.055 U	0.053 U
Phenol	mg/kg	210000	18000	5	0.035 U	0.037 U	0.035 U	0.035 U	0.035 U	0.036 U	0.037 U	0.036 U	0.036 U	0.033 U	0.033 U	0.03 U	0.034 U	0.035 U	0.033 U	0.033 U	0.034 U	0.032 U
2,3,4,6-Tetrachlorophenol	mg/kg	NS	NS	NS	0.034 U	0.036 U	0.035 U	0.034 U	0.035 U	0.035 U	0.036 U	0.035 U	0.035 U	0.032 U	0.032 U	0.029 U	0.033 U	0.034 U	0.033 U	0.032 U	0.033 U	0.032 U
2,4,5-Trichlorophenol	mg/kg	68000	6100	44	0.039 U	0.04 U	0.039 U	0.039 U	0.039 U	0.04 U	0.041 U	0.04 U	0.04 U	0.037 U	0.037 U	0.033 U	0.038 U	0.038 U	0.037 U	0.037 U	0.037 U	0.036 U
2,4,6-Trichlorophenol	mg/kg	74	19	0.2	0.031 U	0.033 U	0.032 U	0.031 U	0.031 U	0.032 U	0.033 U	0.032 U	0.032 U	0.03 U	0.03 U	0.027 U	0.031 U	0.031 U	0.03 U	0.03 U	0.03 U	0.029 U
Acenaphthene	mg/kg	37000	3400	74	0.136	0.19	0.0706	0.0269 J	0.466	0.429	0.146	0.018 J	0.0736	0.0459	0.0208 J	0.0963	0.0497	0.0899	0.0407	0.0091 U	0.0093 U	0.009 U
Acenaphthylene	mg/kg	300000	NS	NS	0.112	0.159	0.0475	0.0287 J	0.446	0.389	0.04	0.011 U	0.028 J	0.0688	0.01 U	0.0299	0.048	0.0621	0.0531	0.0199 J	0.01 U	0.0099 U
Acetophenone	mg/kg	5	2	2	0.0059 U	0.0061 U	0.0059 U	0.0059 U	0.0059 U	0.0258 J	0.0062 U	0.006 U	0.006 U	0.0055 U	0.0055 U	0.005 U	0.0057 U	0.0058 U	0.0056 U	0.0056 U	0.0057 U	0.0054 U
Anthracene	mg/kg	30000	17000	1500	0.475	0.406	0.158	0.0885	1.68	1.74	0.167	0.0386	0.144	0.18	0.0858	0.0618	0.107	0.163	0.149	0.0269 J	0.011 U	0.0116 J
Atrazine	mg/kg	2400	210	0.2	0.0065 U	0.0069 U	0.0066 U	0.0066 U	0.0066 U	0.0068 U	0.007 U	0.0067 U	0.0067 U	0.0062 U	0.0062 U	0.0056 U	0.0064 U	0.0065 U	0.0063 U	0.0062 U	0.0063 U	0.0061 U
Benzo(a)anthracene	mg/kg	2	0.6	0.5	**1.24**	**0.875**	0.366	0.203	**3.34**	**4.47**	0.43	0.115	0.292	0.406	0.261	0.236	0.277	0.423	0.398	0.0779	0.01 U	0.0416
Benzo(a)pyrene	mg/kg	0.2	0.2	0.2	**1.1**	**0.775**	**0.315**	0.156	**2.91**	**3.05**	**0.403**	0.104	**0.263**	**0.424**	**0.264**	0.196	**0.269**	**0.39**	**0.386**	0.0744	0.0098 U	0.041
Benzo(b)fluoranthene	mg/kg	2	0.6	2	**1.04**	**0.705**	0.302	0.145	**3.07**	**3.1**	0.337	0.107	0.219	0.399	0.191	0.144	0.173	0.39	0.279	0.0893	0.011 U	0.0386
Benzo(g,h,i)perylene	mg/kg	30000	380000	NS	0.672	0.486	0.204	0.0979	1.98	1.89	0.253	0.078	0.162	0.305	0.184	0.127	0.168	0.26	0.262	0.0707	0.012 U	0.0302 J
Benzo(k)fluoranthene	mg/kg	23	6	16	0.875	0.626	0.244	0.149	1.64	3.33	0.343	0.0758	0.233	0.335	0.253	0.197	0.224	0.246	0.369	0.0466	0.012 U	0.0273 J
4-Bromophenyl phenyl ether	mg/kg	NS	NS	NS	0.012 U	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.012 U	0.012 U	0.011 U	0.011 U	0.01 U	0.012 U	0.012 U	0.012 U	0.011 U	0.012 U	0.011 U
Butyl benzyl phthalate	mg/kg	14000	1200	150	0.0381 J	0.02 U	0.02 U	0.019 U	0.019 U	0.02 U	0.157	0.02 U	0.0653 J	0.114	0.062 J	0.0558 J	0.019 U	0.0903	0.0871	0.018 U	0.019 U	0.018 U
1,1'-Biphenyl	mg/kg	34000	3100	90	0.0145 J	0.0758	0.0208 J	0.0039 U	0.0562 J	0.0555 J	0.0041 U	0.004 U	0.004 U	0.0037 U	0.0037 U	0.0033 U	0.0038 U	0.0038 U	0.0037 U	0.0037 U	0.0037 U	0.0036 U
Benzaldehyde	mg/kg	68000	6100	NS	0.0076 U	0.008 U	0.0078 U	0.0077 U	0.0077 U	0.0079 U	0.0081 U	0.0079 U	0.0079 U	0.0072 U	0.0072 U	0.0066 U	0.0075 U	0.0076 U	0.0073 U	0.0073 U	0.0074 U	0.0071 U
2-Chloronaphthalene	mg/kg	NS	NS	NS	0.01 U	0.011 U	0.01 U	0.01 U	0.01 U	0.011 U	0.011 U	0.011 U	0.011 U	0.0098 U	0.0098 U	0.0089 U	0.01 U	0.01 U	0.0099 U	0.0098 U	0.01 U	0.0096 U
4-Chloroaniline	mg/kg	NS	NS	NS	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.01 U	0.01 U	0.0091 U	0.01 U	0.011 U	0.01 U	0.01 U	0.01 U	0.0099 U
Carbazole	mg/kg	96	24	NS	0.221	0.16	0.0632 J	0.0293 J	0.597	0.535	0.0855	0.016 U	0.0613 J	0.0585 J	0.0311 J	0.0221 J	0.015 U	0.0449 J	0.0526 J	0.015 U	0.015 U	0.014 U
Caprolactam	mg/kg	340000	31000	8	0.01 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.0099 U	0.0099 U	0.009 U	0.01 U	0.01 U	0.01 U	0.0099 U	0.01 U	0.0097 U
Chrysene	mg/kg	230	62	52	1.31	0.906	0.363	0.203	3.59	4.48	0.475	0.122	0.308	0.455	0.287	0.255	0.297	0.467	0.428	0.0904	0.011 U	0.0459
bis(2-Chloroethoxy)methane	mg/kg	NS	NS	NS	0.013 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.012 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.012 U
bis(2-Chloroethyl)ether	mg/kg	2	0.4	0.2	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.011 U	0.01 U	0.01 U	0.0095 U	0.0095 U	0.0086 U	0.0098 U	0.0099 U	0.0096 U	0.0095 U	0.0097 U	0.0093 U
bis(2-Chloroisopropyl)ether	mg/kg	67	23	3	0.0099 U	0.01 U	0.01 U	0.0099 U	0.0099 U	0.01 U	0.011 U	0.01 U	0.01 U	0.0093 U	0.0094 U	0.0085 U	0.0097 U	0.0098 U	0.0094 U	0.0094 U	0.0095 U	0.0092 U
4-Chlorophenyl phenyl ether	mg/kg	NS	NS	NS	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.011 U	0.01 U	0.01 U	0.0095 U	0.0095 U	0.0086 U	0.0098 U	0.0099 U	0.0096 U	0.0095 U	0.0097 U	0.0093 U
2,4-Dinitrotoluene	mg/kg	3	0.7	NS	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.014 U	0.014 U	0.012 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U
2,6-Dinitrotoluene	mg/kg	3	0.7	NS	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.012 U	0.012 U	0.011 U	0.012 U	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U
3,3'-Dichlorobenzidine	mg/kg	4	1	0.2	0.0084 U	0.0088 U	0.0086 U	0.0085 U	0.0085 U	0.0087 U	0.009 U	0.0087 U	0.0087 U	0.008 U	0.008 U	0.0073 U	0.0083 U	0.0084 U	0.0081 U	0.008 U	0.0082 U	0.0079 U
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	0.5	**0.241**	0.172	0.0674	0.0338	**0.766**	**0.844**	0.0864	0.0241 J	0.0607	0.101	0.0596	0.0379	0.0517	0.09	0.0844	0.011 U	0.011 U	0.0155 J
Dibenzofuran	mg/kg	NS	NS	NS	0.0875	0.118	0.0357 J	0.0241 J	0.473	0.524	0.0354 J	0.01 U	0.0437 J	0.026 J	0.0126 J	0.0085 U	0.026 J	0.0379 J	0.0235 J	0.0094 U	0.0095 U	0.0092 U
Di-n-butyl phthalate	mg/kg	68000	6100	620	0.0379 J	0.0077 U	0.0075 U	0.0074 U	0.0074 U	0.0076 U	0.0079 U	0.0076 U	0.0076 U	0.007 U	0.007 U	0.0063 U	0.0072 U	0.0073 U	0.0071 U	0.007 U	0.0071 U	0.0069 U
Di-n-octyl phthalate	mg/kg	27000	2400	3300	0.045 J	0.0861	0.016 U	0.016 U	0.13	0.0452 J	0.017 U	0.017 U	0.017 U	0.015 U	0.015 U	0.0691	0.016 U	0.204	0.015 U	0.015 U	0.016 U	0.0471 J
Diethyl phthalate	mg/kg	550000	49000	57	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U	0.011 U	0.0097 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Dimethyl phthalate	mg/kg	NS	NS	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0412 J	0.011 U	0.01 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.011 U
bis(2-Ethylhexyl)phthalate	mg/kg	140	35	790	0.176	0.123	0.0418 J	0.0385 J	0.03 U	0.1	0.513	0.0576 J	0.204	2.02	0.368	0.421	0.897	1.4	2.42	0.0807	0.028 U	0.0487 J
Fluoranthene	mg/kg	24000	2300	840	2.03	1.62	0.728	0.396	6.62	8.76	0.962	0.242	0.645	0.748	0.499	0.452	0.472	0.846	0.724	0.124	0.014 U	0.0794
Fluorene	mg/kg	24000	2300	110	0.192	0.356	0.0982	0.0518	0.887	1.08	0.0977	0.0228 J	0.0911	0.0555	0.0328	0.0259 J	0.0833	0.0899	0.0531	0.01 U	0.011 U	0.01 U
Hexachlorobenzene	mg/kg	1	0.3	0.2	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.01 U	0.01 U	0.0093 U	0.011 U	0.011 U	0.01 U	0.01 U	0.01 U	0.01 U
Hexachlorobutadiene	mg/kg	25	6	0.6	0.0092 U	0.0097 U	0.0094 U	0.0093 U	0.0093 U	0.0095 U	0.0098 U	0.0095 U	0.0095 U	0.0088 U	0.0088 U	0.0079 U	0.009 U	0.0091 U	0.0088 U	0.0088 U	0.0089 U	0.0086 U
Hexachlorocyclopentadiene	mg/kg	110	45	210	0.034 U	0.036 U	0.034 U	0.034 U	0.034 U	0.035 U	0.036 U	0.035 U	0.035 U	0.032 U	0.032 U	0.029 U	0.033 U	0.034 U	0.032 U	0.032 U	0.033 U	0.032 U
Hexachloroethane	mg/kg	140	35	0.2	0.0092 U	0.0097 U	0.0094 U	0.0093 U	0.0093 U	0.0095 U	0.0098 U	0.0095 U	0.0095 U	0.0088 U	0.0088 U	0.0079 U	0.009 U	0.0091 U	0.0088 U	0.0088 U	0.0089 U	0.0086 U
Indeno(1,2,3-cd)pyrene	mg/kg	2	0.6	5	**0.631**	0.456	0.191	0.0928	**1.78**	**1.82**	0.223	0.065	0.149	0.259	0.154	0.109	0.145	0.229	0.229	0.0632	0.011 U	0.0262 J
Isophorone	mg/kg	2000	510	0.2	0.0089 U	0.0094 U	0.0091 U	0.009 U	0.009 U	0.0092 U	0.0095 U	0.0092 U	0.0092 U	0.0085 U	0.0085 U	0.0077 U	0.0087 U	0.0088 U	0.0086 U	0.0085 U	0.0086 U	0.0083 U
2-Methylnaphthalene	mg/kg	2400	230	5	0.04 J	0.193	0.033 J	0.0252 J	0.236	0.128	0.02 U	0.019 U	0.019 U	0.0192 J	0.018 U	0.016 U	0.1	0.158	0.018 U	0.018 U	0.018 U	0.017 U
2-Nitroaniline	mg/kg	23000	39	NS	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.016 U	0.015 U	0.015 U	0.014 U	0.014 U	0.013 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U
3-Nitroaniline	mg/kg	NS	NS	NS	0.013 U	0.014 U	0.013 U	0.013 U	0.013 U	0.014 U	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.011 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.012 U
4-Nitroaniline	mg/kg	NS	NS	NS	0.013 U	0.014 U	0.013 U	0.013 U	0.013 U	0.013 U	0.014 U	0.013 U	0.013 U	0.012 U	0.012 U	0.011 U	0.013 U	0.013 U	0.012 U	0.012 U	0.013 U	0.012 U
Naphthalene	mg/kg	17	6	16	0.0567	0.1	0.0306 J	0.0218 J	0.352	0.255	0.0352	0.0093 U	0.0403	0.0199 J	0.0086 U	0.0232 J	0.0089 U	0.009 U	0.0243 J	0.255	0.0088 U	0.0428
Nitrobenzene	mg/kg	340	31	0.2	0.0096 U	0.01 U	0.0098 U	0.0097 U	0.0097 U	0.0099 U	0.01 U	0.0099 U	0.0099 U	0.0091 U	0.0091 U	0.0083 U	0.0094 U	0.0095 U	0.0092 U	0.0091 U	0.0093 U	0.0089 U
N-Nitroso-di-n-propylamine	mg/kg	0.3	0.2	0.2	0.0081 U	0.0085 U	0.0082 U	0.0082 U	0.0082 U	0.0084 U	0.0086 U	0.0083 U	0.0083 U	0.0077 U	0.0077 U	0.007 U	0.0079 U	0.008 U	0.0078 U	0.0077 U	0.0078 U	0.0075 U
N-Nitrosodiphenylamine	mg/kg	390	99	0.2	0.02 U	0.021 U	0.02 U	0.02 U	0.02 U	0.021 U	0.021 U	0.02 U	0.02 U	0.019 U	0.019 U	0.017 U	0.019 U	0.02 U	0.019 U	0.019 U	0.019 U	0.018 U
Phenanthrene	mg/kg	300000	NS	NS	1.69	1.48	0.561	0.332	6.39	7.53	0.661	0.172	0.6	0.492	0.327	0.173	0.371	0.55	0.473	0.0814	0.015 U	0.0539
Pyrene	mg/kg	18000	1700	550	2.25	1.65	0.734	0.386	6.15	7.51	0.929	0.236	0.583	0.751	0.513	0.467	0.531	0.863	0.701	0.13	0.012 U	0.0857
Pyridine	mg/kg	NS	NS	NS	0.013 U	0.014 U	0.013 U	0.013 U	0.013 U	0.014 U	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.011 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.012 U
1,2,4,5-Tetrachlorobenzene	mg/kg	NS	NS	NS	0.01 U	0.011 U	0.01 U	0.01 U	0.01 U	0.011 U	0.011 U	0.01 U	0.01 U	0.0097 U	0.0097 U	0.0088 U	0.01 U	0.01 U	0.0098 U	0.0097 U	0.0099 U	0.0095 U
SVOC Tentatively Identified Compounds (TICs)																						
Total TIC, Semi-Volatile	mg/kg	NS	NS	NS	6.29	43.33	16.31	7.64	18.95	24.29	1.53	0.39	0.82	2.8	2.07	2.21	14.93	15.49	4.49	5.90	0	0

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-3: SVOC Soil Analytical Results
USACE Assunpink Creak Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-04	AC-04	AC-04	SB-01	SB-01	SB-01	SB-01	SB-01	SB-02	SB-02	SB-02	SB-02	SB-02	SB-03	SB-03	SB-03	SB-03	SB-03
Sample Depth Interval (ft bgs)					9.0 - 9.5	12.0 - 12.5	12.0 - 12.5	5.0 - 5.5	11.5 - 12.0	12.0 - 14.0	14.0 - 16.0	19.2 - 19.7	4.0 - 6.0	11.0 - 11.5	12.0 - 14.0	14.0 - 16.0	19.5 - 20.0	5.5 - 6.0	11.5 - 12.0	12.0 - 14.0	16.0 - 18.0	16.0 - 18.0
Client Sample ID:		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	AC-04.09.0-09.5	AC-04.12.0-12.5	DUP-08	SB-01.05.0-05.5	SB-01.11.5-12.0	SB-01.12.0-14.0	SB-01.14.0-16.0	SB-01.19.2-19.7	SB-02.04.0-06.0	SB-02.11.0-11.5	SB-02.12.0-14.0	SB-02.14.0-16.0	SB-02.19.5-20.0	SB-03.05.5-06.0	SB-03.11.5-12.0	SB-03.12.0-14.0	SB-03.16.0-18.0	DUP-02
Lab Sample ID:					JA74720-9	JA74720-13	JA74720-5	JA74168-25	JA74168-27	JA74168-29	JA74168-31	JA74168-33	JA74168-15	JA74168-19	JA74168-17	JA74168-21	JA74168-23	JA74168-3	JA74168-5	JA74168-7	JA74168-9	JA74168-11
Date Sampled:					5/2/2011	5/2/2011	5/2/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Semi-Volatile Organic Compounds (SVOCs)																						
2-Chlorophenol	mg/kg	2200	310	0.5	0.035 U	0.033 U	0.032 U	0.031 U	0.032 U	0.029 U	0.032 U	0.037 U	0.029 U	0.033 U	0.034 U	0.034 U	0.037 U	0.032 U	0.033 U	0.034 U	0.033 U	0.033 U
4-Chloro-3-methyl phenol	mg/kg	NS	NS	NS	0.035 U	0.033 U	0.032 U	0.031 U	0.032 U	0.029 U	0.032 U	0.037 U	0.029 U	0.033 U	0.034 U	0.033 U	0.037 U	0.032 U	0.033 U	0.034 U	0.032 U	0.032 U
2,4-Dichlorophenol	mg/kg	2100	180	0.2	0.056 U	0.053 U	0.051 U	0.05 U	0.052 U	0.046 U	0.051 U	0.059 U	0.046 U	0.052 U	0.054 U	0.054 U	0.059 U	0.051 U	0.053 U	0.055 U	0.052 U	0.052 U
2,4-Dimethylphenol	mg/kg	14000	1200	0.7	0.059 U	0.055 U	0.053 U	0.052 U	0.054 U	0.048 U	0.053 U	0.061 U	0.048 U	0.055 U	0.056 U	0.056 U	0.0792 J	0.053 U	0.055 U	0.057 U	0.054 U	0.054 U
2,4-Dinitrophenol	mg/kg	1400	120	0.3	0.043 U	0.04 U	0.039 U	0.038 U	0.039 U	0.035 U	0.039 U	0.045 U	0.035 U	0.04 U	0.041 U	0.041 U	0.045 U	0.039 U	0.04 U	0.041 U	0.039 U	0.039 U
4,6-Dinitro-o-cresol	mg/kg	68	6	0.3	0.043 U	0.04 U	0.039 U	0.038 U	0.039 U	0.035 U	0.039 U	0.045 U	0.035 U	0.04 U	0.041 U	0.041 U	0.045 U	0.039 U	0.04 U	0.041 U	0.039 U	0.039 U
2-Methylphenol	mg/kg	3400	310	NS	0.04 U	0.037 U	0.036 U	0.035 U	0.036 U	0.033 U	0.036 U	0.042 U	0.033 U	0.037 U	0.038 U	0.038 U	0.042 U	0.036 U	0.037 U	0.039 U	0.037 U	0.037 U
3&4-Methylphenol	mg/kg	NS	NS	NS	0.044 U	0.042 U	0.04 U	0.039 U	0.041 U	0.036 U	0.04 U	0.046 U	0.036 U	0.0603 J	0.043 U	0.042 U	0.106	0.04 U	0.042 U	0.043 U	0.041 U	0.041 U
2-Nitrophenol	mg/kg	NS	NS	NS	0.037 U	0.035 U	0.034 U	0.033 U	0.034 U	0.03 U	0.034 U	0.039 U	0.03 U	0.035 U	0.036 U	0.035 U	0.039 U	0.033 U	0.035 U	0.036 U	0.034 U	0.034 U
4-Nitrophenol	mg/kg	NS	NS	NS	0.059 U	0.055 U	0.054 U	0.052 U	0.054 U	0.048 U	0.054 U	0.062 U	0.048 U	0.055 U	0.057 U	0.056 U	0.062 U	0.053 U	0.055 U	0.057 U	0.054 U	0.054 U
Pentachlorophenol	mg/kg	10	3	0.3	0.06 U	0.056 U	0.054 U	0.053 U	0.055 U	0.049 U	0.054 U	0.062 U	0.049 U	0.056 U	0.057 U	0.057 U	0.063 U	0.054 U	0.056 U	0.058 U	0.055 U	0.055 U
Phenol	mg/kg	210000	18000	5	0.037 U	0.034 U	0.033 U	0.033 U	0.034 U	0.03 U	0.033 U	0.038 U	0.03 U	0.034 U	0.035 U	0.035 U	0.0442 J	0.033 U	0.034 U	0.036 U	0.034 U	0.034 U
2,3,4,6-Tetrachlorophenol	mg/kg	NS	NS	NS	0.036 U	0.034 U	0.033 U	0.032 U	0.033 U	0.029 U	0.033 U	0.038 U	0.029 U	0.034 U	0.035 U	0.034 U	0.038 U	0.033 U	0.034 U	0.035 U	0.033 U	0.033 U
2,4,5-Trichlorophenol	mg/kg	68000	6100	44	0.041 U	0.038 U	0.037 U	0.036 U	0.037 U	0.033 U	0.037 U	0.042 U	0.033 U	0.038 U	0.039 U	0.039 U	0.043 U	0.037 U	0.038 U	0.039 U	0.037 U	0.037 U
2,4,6-Trichlorophenol	mg/kg	74	19	0.2	0.033 U	0.031 U	0.03 U	0.029 U	0.03 U	0.027 U	0.03 U	0.034 U	0.027 U	0.031 U	0.032 U	0.031 U	0.035 U	0.03 U	0.031 U	0.032 U	0.03 U	0.03 U
Acenaphthene	mg/kg	37000	3400	74	0.01 U	0.0095 U	0.0092 U	0.124	0.524	0.135	1.47	0.011 U	0.0939	1.71	0.259	0.518	3.61	0.0092 U	0.0159 J	0.0098 U	0.0094 U	0.0093 U
Acenaphthylene	mg/kg	300000	NS	NS	0.011 U	0.01 U	0.01 U	0.091	0.158	0.0855	0.249	0.012 U	0.132	1.11	0.228	0.269	2.32	0.025 J	0.0246 J	0.0207 J	0.01 U	0.01 U
Acetophenone	mg/kg	5	2	2	0.0062 U	0.0058 U	0.0056 U	0.0055 U	0.0056 U	0.005 U	0.0056 U	0.0064 U	0.005 U	0.0057 U	0.0059 U	0.0059 U	0.0065 U	0.0056 U	0.0058 U	0.006 U	0.0057 U	0.0057 U
Anthracene	mg/kg	30000	17000	1500	0.0232 J	0.011 U	0.0223 J	0.366	1.34	0.405	2.26	0.016 J	0.37	3.65	0.735	1.31	13.1	0.0287 J	0.0638	0.0252 J	0.011 U	0.011 U
Atrazine	mg/kg	2400	210	0.2	0.0069 U	0.0065 U	0.0063 U	0.0061 U	0.0063 U	0.0056 U	0.0063 U	0.0072 U	0.0056 U	0.0064 U	0.0066 U	0.0066 U	0.0072 U	0.0062 U	0.0065 U	0.0067 U	0.0064 U	0.0063 U
Benzo(a)anthracene	mg/kg	2	0.6	0.5	0.088	0.011 U	0.0779	**0.973**	**2.44**	**0.861**	**4.01**	0.0456	**0.865**	**12.5**	**1.82**	**2.64**	**16**	0.1	0.178	0.0822	0.011 U	0.011 U
Benzo(a)pyrene	mg/kg	0.2	0.2	0.2	0.0682	0.01 U	0.0814	**0.883**	**1.83**	**0.723**	**3.04**	0.0345 J	**0.756**	**11.1**	**1.63**	**2**	**12.5**	0.108	0.16	0.0721	0.0098 U	0.0098 U
Benzo(b)fluoranthene	mg/kg	2	0.6	2	0.0677	0.011 U	0.0524	**0.786**	**1.88**	**0.855**	**2.61**	0.0287 J	**0.661**	**21.4**	**1.5**	**2.44**	**11.1**	0.0844	0.157	0.0604	0.011 U	0.011 U
Benzo(g,h,i)perylene	mg/kg	30000	380000	NS	0.0435	0.012 U	0.0684	0.5	1	0.408	1.44	0.0203 J	0.417	6.49	1	1.07	6.13	0.0626	0.0977	0.051	0.012 U	0.012 U
Benzo(k)fluoranthene	mg/kg	23	6	16	0.0443	0.012 U	0.0823	0.666	1.18	0.376	2.61	0.0296 J	0.603	**13.2**	1.1	1.21	**9.82**	0.0941	0.116	0.0623	0.012 U	0.012 U
4-Bromophenyl phenyl ether	mg/kg	NS	NS	NS	0.013 U	0.012 U	0.012 U	0.011 U	0.012 U	0.01 U	0.012 U	0.013 U	0.01 U	0.012 U	0.012 U	0.012 U	0.013 U	0.011 U	0.012 U	0.012 U	0.012 U	0.012 U
Butyl benzyl phthalate	mg/kg	14000	1200	150	0.02 U	0.019 U	0.018 U	0.018 U	0.019 U	0.017 U	0.018 U	0.021 U	0.017 U	0.019 U	0.019 U	0.019 U	0.021 U	0.018 U	0.019 U	0.02 U	0.019 U	0.019 U
1,1'-Biphenyl	mg/kg	34000	3100	90	0.0041 U	0.0038 U	0.0037 U	0.0036 U	0.0534 J	0.0142 J	0.0801	0.0042 U	0.0033 U	0.125	0.0266 J	0.0735	0.845	0.0037 U	0.0038 U	0.0039 U	0.0037 U	0.0037 U
Benzaldehyde	mg/kg	68000	6100	NS	0.0081 U	0.0075 U	0.0073 U	0.0071 U	0.0074 U	0.0066 U	0.0073 U	0.0084 U	0.0066 U	0.0075 U	0.0077 U	0.0077 U	0.0085 U	0.0073 U	0.0075 U	0.0078 U	0.0074 U	0.0074 U
2-Chloronaphthalene	mg/kg	NS	NS	NS	0.011 U	0.01 U	0.0098 U	0.0096 U	0.0099 U	0.0089 U	0.0098 U	0.011 U	0.0089 U	0.01 U	0.01 U	0.01 U	0.011 U	0.0098 U	0.01 U	0.01 U	0.01 U	0.01 U
4-Chloroaniline	mg/kg	NS	NS	NS	0.011 U	0.01 U	0.01 U	0.0099 U	0.01 U	0.0091 U	0.01 U	0.012 U	0.0091 U	0.01 U	0.011 U	0.011 U	0.012 U	0.01 U	0.01 U	0.011 U	0.01 U	0.01 U
Carbazole	mg/kg	96	24	NS	0.016 U	0.015 U	0.015 U	0.145	0.699	0.193	1.2	0.017 U	0.144	3.11	0.315	0.737	4.94	0.015 U	0.0214 J	0.016 U	0.015 U	0.015 U
Caprolactam	mg/kg	340000	31000	8	0.011 U	0.01 U	0.01 U	0.0098 U	0.01 U	0.009 U	0.01 U	0.011 U	0.009 U	0.01 U	0.011 U	0.011 U	0.012 U	0.0099 U	0.01 U	0.011 U	0.01 U	0.01 U
Chrysene	mg/kg	230	62	52	0.0901	0.011 U	0.0874	0.904	2.24	0.783	3.78	0.0422	0.819	23.3	1.83	2.5	15	0.0911	0.171	0.0789	0.011 U	0.011 U
bis(2-Chloroethoxy)methane	mg/kg	NS	NS	NS	0.014 U	0.013 U	0.013 U	0.013 U	0.013 U	0.012 U	0.013 U	0.015 U	0.012 U	0.013 U	0.014 U	0.013 U	0.015 U	0.013 U	0.013 U	0.014 U	0.013 U	0.013 U
bis(2-Chloroethyl)ether	mg/kg	2	0.4	0.2	0.011 U	0.0099 U	0.0096 U	0.0093 U	0.0096 U	0.0086 U	0.0096 U	0.011 U	0.0086 U	0.0098 U	0.01 U	0.01 U	0.011 U	0.0095 U	0.0099 U	0.01 U	0.0097 U	0.0097 U
bis(2-Chloroisopropyl)ether	mg/kg	67	23	3	0.01 U	0.0097 U	0.0094 U	0.0092 U	0.0095 U	0.0085 U	0.0094 U	0.011 U	0.0085 U	0.0097 U	0.01 U	0.0099 U	0.011 U	0.0094 U	0.0097 U	0.01 U	0.0096 U	0.0096 U
4-Chlorophenyl phenyl ether	mg/kg	NS	NS	NS	0.011 U	0.0099 U	0.0096 U	0.0093 U	0.0096 U	0.0086 U	0.0096 U	0.011 U	0.0086 U	0.0098 U	0.01 U	0.01 U	0.011 U	0.0095 U	0.0099 U	0.01 U	0.0097 U	0.0097 U
2,4-Dinitrotoluene	mg/kg	3	0.7	NS	0.015 U	0.014 U	0.014 U	0.014 U	0.014 U	0.012 U	0.014 U	0.016 U	0.012 U	0.014 U	0.015 U	0.015 U	0.016 U	0.014 U	0.014 U	0.015 U	0.014 U	0.014 U
2,6-Dinitrotoluene	mg/kg	3	0.7	NS	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U	0.012 U	0.014 U	0.011 U	0.012 U	0.013 U	0.013 U	0.014 U	0.012 U	0.012 U	0.013 U	0.012 U	0.012 U
3,3'-Dichlorobenzidine	mg/kg	4	1	0.2	0.0089 U	0.0083 U	0.0081 U	0.0079 U	0.0081 U	0.0073 U	0.0081 U	0.0093 U	0.0073 U	0.0083 U	0.0085 U	0.0085 U	0.0093 U	0.008 U	0.0083 U	0.0086 U	0.0082 U	0.0082 U
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	0.5	0.021 J	0.011 U	0.011 U	**0.245**	**0.529**	0.174	**0.702**	0.012 U	0.169	**2.37**	**0.449**	**0.465**	**2.58**	0.0153 J	0.0401	0.0204 J	0.011 U	0.011 U
Dibenzofuran	mg/kg	NS	NS	NS	0.01 U	0.0097 U	0.0094 U	0.0739	0.448	0.107	0.656	0.011 U	0.0664	1.29	0.177	0.491	5.83	0.0094 U	0.0131 J	0.01 U	0.0096 U	0.0096 U
Di-n-butyl phthalate	mg/kg	68000	6100	620	0.0078 U	0.0073 U	0.007 U	0.0069 U	0.0071 U	0.0063 U	0.0071 U	0.0081 U	0.0063 U	0.0072 U	0.0075 U	0.0777	0.0082 U	0.007 U	0.0073 U	0.0075 U	0.0072 U	0.0072 U
Di-n-octyl phthalate	mg/kg	27000	2400	3300	0.017 U	0.016 U	0.015 U	0.015 U	0.016 U	0.014 U	0.015 U	0.018 U	0.144	0.016 U	0.101 J	0.0878	0.018 U	0.015 U	0.016 U	0.016 U	0.016 U	0.016 U
Diethyl phthalate	mg/kg	550000	49000	57	0.012 U	0.011 U	0.011 U	0.011 U	0.011 U	0.0097 U	0.011 U	0.012 U	0.0097 U	0.011 U	0.011 U	0.011 U	0.013 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U
Dimethyl phthalate	mg/kg	NS	NS	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U	0.011 U	0.013 U	0.01 U	0.011 U	0.012 U	0.012 U	0.013 U	0.011 U	0.012 U	0.012 U	0.011 U	0.011 U
bis(2-Ethylhexyl)phthalate	mg/kg	140	35	790	0.031 U	0.029 U	0.0641	0.143	0.104	0.0584	0.028 U	0.032 U	0.0578	0.029 U	0.11	0.651	0.15	0.028 U	0.029 U	0.03 U	0.028 U	0.028 U
Fluoranthene	mg/kg	24000	2300	840	0.218	0.014 U	0.123	1.84	5.23	1.71	8.82	0.0833	1.79	78.7	3.94	5.81	38.3	0.133	0.336	0.133	0.014 U	0.014 U
Fluorene	mg/kg	24000	2300	110	0.011 U	0.011 U	0.01 U	0.141	0.679	0.181	1.43	0.012 U	0.112	2.37	0.339	0.807	9.58	0.01 U	0.0225 J	0.011 U	0.011 U	0.011 U
Hexachlorobenzene	mg/kg	1	0.3	0.2	0.011 U	0.011 U	0.01 U	0.01 U	0.01 U	0.0093 U	0.01 U	0.012 U	0.0093 U	0.011 U	0.011 U	0.011 U	0.012 U	0.01 U	0.011 U	0.011 U	0.011 U	0.011 U
Hexachlorobutadiene	mg/kg	25	6	0.6	0.0097 U	0.0091 U	0.0088 U	0.0086 U	0.0089 U	0.0079 U	0.0088 U	0.01 U	0.0079 U	0.0091 U	0.0093 U	0.0093 U	0.01 U	0.0088 U	0.0091 U	0.0094 U	0.009 U	0.009 U
Hexachlorocyclopentadiene	mg/kg	110	45	210	0.036 U	0.033 U	0.032 U	0.032 U	0.033 U	0.029 U	0.032 U	0.037 U	0.029 U	0.033 U	0.034 U	0.034 U	0.037 U	0.032 U	0.033 U	0.035 U	0.033 U	0.033 U
Hexachloroethane	mg/kg	140	35	0.2	0.0097 U	0.0091 U	0.0088 U	0.0086 U	0.0089 U	0.0079 U	0.0088 U	0.01 U	0.0079 U	0.0091 U	0.0093 U	0.0093 U	0.01 U	0.0088 U	0.0091 U	0.0094 U	0.009 U	0.009 U
Indeno(1,2,3-cd)pyrene	mg/kg	2	0.6	5	0.0381	0.011 U	0.0673	0.497	**0.999**	0.391	**1.51**	0.0175 J	0.407	**6.31**	**0.922**	**1.07**	**6.26**	0.0571	0.091	0.0447	0.011 U	0.011 U
Isophorone	mg/kg	2000	510	0.2	0.0094 U	0.0088 U	0.0085 U	0.0083 U	0.0086 U	0.0077 U	0.0085 U	0.0098 U	0.0077 U	0.0088 U	0.009 U	0.009 U	0.0099 U	0.0085 U	0.0088 U	0.0091 U	0.0087 U	0.0087 U
2-Methylnaphthalene	mg/kg	2400	230	5	0.02 U	0.018 U	0.018 U	0.0289 J	0.193	0.0428 J	0.336	0.02 U	0.0343 J	0.303	0.0883	0.24	2.97	0.018 U	0.018 U	0.019 U	0.018 U	0.018 U
2-Nitroaniline	mg/kg	23000	39	NS	0.015 U	0.014 U	0.014 U	0.014 U	0.014 U	0.013 U	0.014 U	0.016 U	0.013 U	0.014 U	0.015 U	0.015 U	0.016 U	0.014 U	0.014 U	0.015 U	0.014 U	0.014 U
3-Nitroaniline	mg/kg	NS	NS	NS	0.014 U	0.013 U	0.013 U	0.012 U	0.013 U	0.011 U	0.013 U	0.015 U	0.011 U	0.013 U	0.013 U	0.013 U	0.015 U	0.013 U	0.013 U	0.014 U	0.013 U	0.013 U
4-Nitroaniline	mg/kg	NS	NS	NS	0.014 U	0.013 U	0.012 U	0.012 U	0.012 U	0.011 U	0.012 U	0.014 U	0.011 U	0.013 U	0.013 U	0.013 U	0.014 U	0.012 U	0.013 U	0.013 U	0.013 U	0.013 U
Naphthalene	mg/kg	17	6	16	0.0096 U	0.0089 U	0.171	0.0544	0.357	0.0757	0.317	0.01 U	0.0443	0.216	0.143	0.477	**7.06**	0.0086 U	0.0089 U	0.0092 U	0.0088 U	0.0088 U
Nitrobenzene	mg/kg	340	31	0.2	0.01 U	0.0095 U	0.0092 U	0.009 U	0.0092 U	0.0083 U	0.0092 U	0.011 U	0.0083 U	0.0094 U	0.0097 U	0.0097 U	0.011 U	0.0091 U	0.0095 U	0.0098 U	0.0093 U	0.0093 U
N-Nitroso-di-n-propylamine	mg/kg	0.3	0.2	0.2	0.0085 U	0.008 U	0.0077 U	0.0076 U	0.0078 U	0.007 U	0.0077 U	0.0089 U	0.007 U	0.0079 U	0.0082 U	0.0081 U	0.009 U	0.0077 U	0.008 U	0.0083 U	0.0079 U	0.0079 U
N-Nitrosodiphenylamine	mg/kg	390	99	0.2	0.021 U	0.02 U	0.019 U	0.019 U	0.019 U	0.017 U	0.019 U	0.022 U	0.017 U	0.019 U	0.02 U	0.02 U	0.022 U	0.019 U	0.02 U	0.02 U	0.019 U	0.019 U
Phenanthrene	mg/kg	300000	NS	NS	0.0987	0.015 U	0.0759	1.3	5.37	1.44	9.34	0.0584	1.28	51.5	2.96	5.36	47.6	0.05	0.22	0.0867	0.015 U	0.015 U
Pyrene	mg/kg	18000	1700	550	0.197	0.013 U	0.138	1.51	4.2	1.31	7.46	0.0717	1.51	57.8	3.25	4.59	28.9	0.14	0.288	0.12	0.012 U	0.012 U
Pyridine	mg/kg	NS	NS	NS	0.014 U	0.013 U	0.013 U	0.012 U	0.013 U	0.011 U	0.013 U	0.015 U	0.011 U	0.013 U	0.013 U	0.013 U	0.015 U	0.013 U	0.013 U	0.014 U	0.013 U	0.013 U
1,2,4,5-Tetrachlorobenzene	mg/kg	NS	NS	NS	0.011 U	0.01 U	0.0097 U	0.0095 U	0.0098 U	0.0088 U	0.0098 U	0.011 U	0.0088 U	0.01 U	0.01 U	0.01 U	0.011 U	0.0097 U	0.01 U	0.01 U	0.0099 U	0.0099 U
SVOC Tentatively Identified Compounds (TICs)																						
Total TIC, Semi-Volatile	mg/kg	NS	NS	NS	0.19	0	2.36	3.80	10.95	4.13	21.12	2.20	5.62	21.41	8.87	12.92	19.48	0.15	0.48	0.35	0	0

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-3: SVOC Soil Analytical Results
USACE Assunpink Creak Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-03	SB-04	SB-04	SB-04	SB-04	SB-04	SB-05	SB-05	SB-05	SB-05	SB-05
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	18.0 - 19.3	5.5 - 6.0	7.5 - 8.0	8.5 - 9.0	13.5 - 14.0	17.3 - 17.8	5.0 - 5.5	7.5 - 8.0	8.5 - 9.0	12.5 - 13.0	14.7 - 15.2
Client Sample ID:					SB-03.18.0-19.3	SB-04.05.5-06.0	SB-04.07.5-08.0	SB-04.08.5-09.0	SB-04.13.5-14.0	SB-04.17.3-17.8	SB-05.05.0-05.5	SB-05.07.5-08.0	SB-05.08.5-09.0	SB-05.12.5-13.0	SB-05.14.7-15.2
Lab Sample ID:					JA74168-13	JA75102-15	JA75102-17	JA75102-19	JA75102-21	JA75102-23	JA75102-3	JA75102-5	JA75102-9	JA75102-11	JA75102-13
Date Sampled:					4/26/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Semi-Volatile Organic Compounds (SVOCs)															
2-Chlorophenol	mg/kg	2200	310	0.5	0.033 U	0.032 U	0.034 U	0.034 U	0.036 U	0.034 U	0.032 U	0.033 U	0.036 U	0.035 U	0.034 U
4-Chloro-3-methyl phenol	mg/kg	NS	NS	NS	0.033 U	0.032 U	0.034 U	0.034 U	0.035 U	0.033 U	0.032 U	0.032 U	0.035 U	0.034 U	0.034 U
2,4-Dichlorophenol	mg/kg	2100	180	0.2	0.053 U	0.051 U	0.055 U	0.054 U	0.057 U	0.054 U	0.051 U	0.052 U	0.057 U	0.055 U	0.054 U
2,4-Dimethylphenol	mg/kg	14000	1200	0.7	0.055 U	0.053 U	0.057 U	0.057 U	0.059 U	0.056 U	0.054 U	0.054 U	0.059 U	0.057 U	0.056 U
2,4-Dinitrophenol	mg/kg	1400	120	0.3	0.04 U	0.039 U	0.041 U	0.041 U	0.043 U	0.041 U	0.039 U	0.039 U	0.043 U	0.042 U	0.041 U
4,6-Dinitro-o-cresol	mg/kg	68	6	0.3	0.04 U	0.039 U	0.041 U	0.041 U	0.043 U	0.041 U	0.039 U	0.039 U	0.043 U	0.042 U	0.041 U
2-Methylphenol	mg/kg	3400	310	NS	0.037 U	0.036 U	0.039 U	0.038 U	0.04 U	0.038 U	0.036 U	0.037 U	0.04 U	0.039 U	0.038 U
3&4-Methylphenol	mg/kg	NS	NS	NS	0.041 U	0.04 U	0.043 U	0.043 U	0.045 U	0.042 U	0.041 U	0.041 U	0.045 U	0.043 U	0.043 U
2-Nitrophenol	mg/kg	NS	NS	NS	0.035 U	0.034 U	0.036 U	0.036 U	0.037 U	0.035 U	0.034 U	0.034 U	0.037 U	0.036 U	0.036 U
4-Nitrophenol	mg/kg	NS	NS	NS	0.055 U	0.054 U	0.057 U	0.057 U	0.06 U	0.056 U	0.054 U	0.055 U	0.06 U	0.058 U	0.057 U
Pentachlorophenol	mg/kg	10	3	0.3	0.056 U	0.054 U	0.058 U	0.058 U	0.06 U	0.057 U	0.055 U	0.055 U	0.06 U	0.058 U	0.057 U
Phenol	mg/kg	210000	18000	5	0.034 U	0.033 U	0.036 U	0.035 U	0.037 U	0.035 U	0.034 U	0.034 U	0.037 U	0.036 U	0.035 U
2,3,4,6-Tetrachlorophenol	mg/kg	NS	NS	NS	0.034 U	0.033 U	0.035 U	0.035 U	0.036 U	0.034 U	0.033 U	0.033 U	0.036 U	0.035 U	0.035 U
2,4,5-Trichlorophenol	mg/kg	68000	6100	44	0.038 U	0.037 U	0.039 U	0.039 U	0.041 U	0.039 U	0.037 U	0.037 U	0.041 U	0.04 U	0.039 U
2,4,6-Trichlorophenol	mg/kg	74	19	0.2	0.031 U	0.03 U	0.032 U	0.032 U	0.033 U	0.031 U	0.03 U	0.03 U	0.033 U	0.032 U	0.032 U
Acenaphthene	mg/kg	37000	3400	74	0.0095 U	0.0748	0.114	0.164	0.0687	0.0096 U	0.0137 J	0.0332	0.0485	0.0099 U	0.0155 J
Acenaphthylene	mg/kg	300000	NS	NS	0.01 U	0.0729	0.402	0.0776	0.163	0.011 U	0.032	0.0437	0.0848	0.0191 J	0.029 J
Acetophenone	mg/kg	5	2	2	0.0057 U	0.0056 U	0.006 U	0.0059 U	0.0062 U	0.0059 U	0.0056 U	0.0057 U	0.0062 U	0.006 U	0.0059 U
Anthracene	mg/kg	30000	17000	1500	0.011 U	0.252	0.97	0.426	0.293	0.0188 J	0.0549	0.101	0.166	0.0835	0.0558
Atrazine	mg/kg	2400	210	0.2	0.0064 U	0.0063 U	0.0067 U	0.0066 U	0.007 U	0.0066 U	0.0063 U	0.0064 U	0.0069 U	0.0067 U	0.0066 U
Benzo(a)anthracene	mg/kg	2	0.6	0.5	0.0136 J	**0.633**	**2.83**	**1.08**	**1.2**	0.0483	0.2	0.297	0.42	0.231	0.13
Benzo(a)pyrene	mg/kg	0.2	0.2	0.2	0.01 U	**0.609**	**2.33**	**0.952**	**1.14**	0.0383	**0.204**	**0.297**	**0.418**	0.183	0.11
Benzo(b)fluoranthene	mg/kg	2	0.6	2	0.011 U	0.559	**2.39**	**0.918**	**1.15**	0.0307 J	0.17	0.228	0.358	0.133	0.121
Benzo(g,h,i)perylene	mg/kg	30000	380000	NS	0.012 U	0.384	1.45	0.587	0.707	0.0297 J	0.142	0.208	0.276	0.0962	0.0626
Benzo(k)fluoranthene	mg/kg	23	6	16	0.012 U	0.453	1.64	0.705	0.617	0.0305 J	0.215	0.282	0.32	0.114	0.0724
4-Bromophenyl phenyl ether	mg/kg	NS	NS	NS	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.012 U	0.012 U
Butyl benzyl phthalate	mg/kg	14000	1200	150	0.019 U	0.0642	0.0416 J	0.019 U	0.0449 J	0.019 U	0.019 U	0.0619 J	0.101	0.02 U	0.019 U
1,1'-Biphenyl	mg/kg	34000	3100	90	0.0038 U	0.0037 U	0.0039 U	0.0039 U	0.0041 U	0.0039 U	0.0037 U	0.0037 U	0.0041 U	0.004 U	0.0039 U
Benzaldehyde	mg/kg	68000	6100	NS	0.0075 U	0.0073 U	0.0078 U	0.0077 U	0.0081 U	0.0077 U	0.0073 U	0.0074 U	0.0081 U	0.0079 U	0.0077 U
2-Chloronaphthalene	mg/kg	NS	NS	NS	0.01 U	0.0098 U	0.011 U	0.01 U	0.011 U	0.01 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.01 U
4-Chloroaniline	mg/kg	NS	NS	NS	0.01 U	0.01 U	0.011 U	0.011 U	0.011 U	0.011 U	0.01 U	0.01 U	0.011 U	0.011 U	0.011 U
Carbazole	mg/kg	96	24	NS	0.015 U	0.0928	0.169	0.185	0.0896	0.015 U	0.0275 J	0.0448 J	0.0516 J	0.0188 J	0.0201 J
Caprolactam	mg/kg	340000	31000	8	0.01 U	0.01 U	0.011 U	0.011 U	0.011 U	0.01 U	0.01 U	0.01 U	0.011 U	0.011 U	0.011 U
Chrysene	mg/kg	230	62	52	0.011 U	0.676	2.82	1.15	0.989	0.0475	0.24	0.318	0.47	0.27	0.152
bis(2-Chloroethoxy)methane	mg/kg	NS	NS	NS	0.013 U	0.013 U	0.014 U	0.014 U	0.014 U	0.013 U	0.013 U	0.013 U	0.014 U	0.014 U	0.014 U
bis(2-Chloroethyl)ether	mg/kg	2	0.4	0.2	0.0098 U	0.0095 U	0.01 U	0.01 U	0.011 U	0.01 U	0.0096 U	0.0097 U	0.011 U	0.01 U	0.01 U
bis(2-Chloroisopropyl)ether	mg/kg	67	23	3	0.0097 U	0.0094 U	0.01 U	0.01 U	0.01 U	0.0099 U	0.0095 U	0.0096 U	0.01 U	0.01 U	0.01 U
4-Chlorophenyl phenyl ether	mg/kg	NS	NS	NS	0.0098 U	0.0095 U	0.01 U	0.01 U	0.011 U	0.01 U	0.0096 U	0.0097 U	0.011 U	0.01 U	0.01 U
2,4-Dinitrotoluene	mg/kg	3	0.7	NS	0.014 U	0.014 U	0.015 U	0.015 U	0.015 U	0.015 U	0.014 U	0.014 U	0.015 U	0.015 U	0.015 U
2,6-Dinitrotoluene	mg/kg	3	0.7	NS	0.012 U	0.012 U	0.013 U	0.013 U	0.013 U	0.013 U	0.012 U	0.012 U	0.013 U	0.013 U	0.013 U
3,3'-Dichlorobenzidine	mg/kg	4	1	0.2	0.0083 U	0.0081 U	0.0086 U	0.0086 U	0.009 U	0.0084 U	0.0081 U	0.0082 U	0.009 U	0.0087 U	0.0085 U
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	0.5	0.011 U	0.139	**0.625**	**0.219**	**0.223**	0.011 U	0.0521	0.0696	0.0894	0.034	0.0241 J
Dibenzofuran	mg/kg	NS	NS	NS	0.0097 U	0.0403 J	0.0798	0.0824	0.0407 J	0.0099 U	0.0095 U	0.0206 J	0.0269 J	0.0142 J	0.0247 J
Di-n-butyl phthalate	mg/kg	68000	6100	620	0.0072 U	0.007 U	0.0075 U	0.0075 U	0.0078 U	0.0074 U	0.0071 U	0.0072 U	0.0078 U	0.0076 U	0.0074 U
Di-n-octyl phthalate	mg/kg	27000	2400	3300	0.016 U	0.0412 J	0.017 U	0.0486 J	0.017 U	0.016 U	0.016 U	0.016 U	0.144	0.0383 J	0.0536 J
Diethyl phthalate	mg/kg	550000	49000	57	0.011 U	0.011 U	0.012 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.012 U	0.011 U
Dimethyl phthalate	mg/kg	NS	NS	NS	0.011 U	0.0317 J	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U	0.011 U	0.012 U	0.012 U	0.012 U
bis(2-Ethylhexyl)phthalate	mg/kg	140	35	790	0.029 U	0.374	0.144	0.336	0.194	0.0407 J	0.114	0.294	2.16	0.128	0.139
Fluoranthene	mg/kg	24000	2300	840	0.0177 J	1.19	5.95	2.11	1.5	0.0872	0.433	0.573	0.81	0.341	0.309
Fluorene	mg/kg	24000	2300	110	0.011 U	0.0704	0.236	0.159	0.0952	0.011 U	0.0183 J	0.0332	0.0659	0.028 J	0.041
Hexachlorobenzene	mg/kg	1	0.3	0.2	0.011 U	0.01 U	0.011 U	0.011 U	0.012 U	0.011 U	0.01 U	0.011 U	0.011 U	0.011 U	0.011 U
Hexachlorobutadiene	mg/kg	25	6	0.6	0.0091 U	0.0088 U	0.0095 U	0.0094 U	0.0098 U	0.0092 U	0.0089 U	0.009 U	0.0098 U	0.0095 U	0.0093 U
Hexachlorocyclopentadiene	mg/kg	110	45	210	0.033 U	0.032 U	0.035 U	0.034 U	0.036 U	0.034 U	0.033 U	0.033 U	0.036 U	0.035 U	0.034 U
Hexachloroethane	mg/kg	140	35	0.2	0.0091 U	0.0088 U	0.0095 U	0.0094 U	0.0098 U	0.0092 U	0.0089 U	0.009 U	0.0098 U	0.0095 U	0.0093 U
Indeno(1,2,3-cd)pyrene	mg/kg	2	0.6	5	0.011 U	0.35	**1.37**	0.546	**0.615**	0.0233 J	0.128	0.177	0.241	0.0801	0.0583
Isophorone	mg/kg	2000	510	0.2	0.0088 U	0.0085 U	0.0091 U	0.0091 U	0.0095 U	0.0089 U	0.0086 U	0.0087 U	0.0095 U	0.0092 U	0.009 U
2-Methylnaphthalene	mg/kg	2400	230	5	0.018 U	0.018 U	0.0219 J	0.0238 J	0.0335 J	0.019 U	0.018 U	0.018 U	0.02 U	0.019 U	0.019 U
2-Nitroaniline	mg/kg	23000	39	NS	0.014 U	0.014 U	0.015 U	0.015 U	0.016 U	0.015 U	0.014 U	0.014 U	0.016 U	0.015 U	0.015 U
3-Nitroaniline	mg/kg	NS	NS	NS	0.013 U	0.013 U	0.014 U	0.013 U	0.014 U	0.013 U	0.013 U	0.013 U	0.014 U	0.014 U	0.013 U
4-Nitroaniline	mg/kg	NS	NS	NS	0.013 U	0.012 U	0.013 U	0.013 U	0.014 U	0.013 U	0.012 U	0.013 U	0.014 U	0.013 U	0.013 U
Naphthalene	mg/kg	17	6	16	0.0089 U	0.0185 J	0.032 J	0.0276 J	0.0624	0.0091 U	0.0087 U	0.0143 J	0.02 J	0.0093 U	0.0163 J
Nitrobenzene	mg/kg	340	31	0.2	0.0094 U	0.0092 U	0.0098 U	0.0097 U	0.01 U	0.0096 U	0.0092 U	0.0093 U	0.01 U	0.0099 U	0.0097 U
N-Nitroso-di-n-propylamine	mg/kg	0.3	0.2	0.2	0.008 U	0.0077 U	0.0083 U	0.0082 U	0.0086 U	0.0081 U	0.0078 U	0.0079 U	0.0086 U	0.0083 U	0.0082 U
N-Nitrosodiphenylamine	mg/kg	390	99	0.2	0.019 U	0.019 U	0.02 U	0.02 U	0.021 U	0.02 U	0.019 U	0.019 U	0.021 U	0.02 U	0.02 U
Phenanthrene	mg/kg	300000	NS	NS	0.015 U	0.84	2.73	1.77	0.831	0.0617	0.251	0.385	0.553	0.289	0.311
Pyrene	mg/kg	18000	1700	550	0.0184 J	1.14	5.41	2.02	2	0.084	0.402	0.547	0.791	0.482	0.265
Pyridine	mg/kg	NS	NS	NS	0.013 U	0.013 U	0.014 U	0.013 U	0.014 U	0.013 U	0.013 U	0.013 U	0.014 U	0.014 U	0.013 U
1,2,4,5-Tetrachlorobenzene	mg/kg	NS	NS	NS	0.01 U	0.0097 U	0.01 U	0.01 U	0.011 U	0.01 U	0.0098 U	0.0099 U	0.011 U	0.01 U	0.01 U
SVOC Tentatively Identified Compounds (TICs)															
Total TIC, Semi-Volatile	mg/kg	NS	NS	NS	0	2.93	14.32	6.39	9.93	0.30	1.74	0.75	2.29	3.02	0.51

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-4: Pesticide, Herbicide, and PCB Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		**PROJECT SCREENING LEVELS**			**AC-01**	**AC-01**	**AC-01**	**AC-01**	**AC-02**	**AC-02**	**AC-02**	**AC-02**	**AC-02**	**AC-03**	**AC-03**	**AC-03**	**AC-03**
Sample Depth Interval (ft					**7.5 - 8.0**	**14.0 - 14.5**	**18.0 - 20.0**	**18.0 - 20.0**	**6.0 - 8.0**	**8.5 - 9.0**	**12.0 - 12.5**	**15.0 - 15.5**	**17.5 - 18.0**	**5.5 - 6.0**	**5.5 - 6.0**	**6.0 - 8.0**	**9.0 - 9.5**
Client Sample ID:		**NJ Non-Residential Direct Contact Soil Remediation Standard**	**NJ Residential Direct Contact Soil Remediation Standard**	**NJ Default Impact to Groundwater Soil Screening Level**	**AC-01.07.5-08.0**	**AC-01.14.0-14.5**	**AC-01.18.0-20.0**	**DUP-04**	**AC-02. 06.0-08.0**	**AC-02. 08.5-09.0**	**AC-02. 12.0-12.5**	**AC-02. 15.0-15.5**	**AC-02. 17.5-18.0**	**AC-03.05.5-06.0**	**DUP-06**	**AC-03.06.0-0.80**	**AC-03.09.0-09.5**
Lab Sample ID:					**JA74273-4**	**JA74273-6**	**JA74273-8**	**JA74273-10**	**JA74821-3**	**JA74821-5**	**JA74821-7**	**JA74821-9**	**JA74821-11**	**JA74600-3**	**JA74600-5**	**JA74600-7**	**JA74600-9**
Date Sampled:					**4/27/2011**	**4/27/2011**	**4/27/2011**	**4/27/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**4/29/2011**	**4/29/2011**	**4/29/2011**	**4/29/2011**
Matrix:					**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Pesticides																	
Aldrin	mg/kg	0.2	0.04	0.1	0.00061 U	0.00064 U	0.00063 U	0.00062 U	0.00034 U	0.00063 U	0.00065 U	0.00035 U	0.00035 U	0.00058 U	0.00059 U	0.00053 U	0.0006 U
alpha-BHC	mg/kg	0.5	0.1	0.002	0.00042 U	0.00044 U	0.00043 U	0.00043 U	0.00051 U	0.00043 U	0.00045 U	0.00053 U	0.00052 U	0.0004 U	0.00041 U	0.00037 U	0.00041 U
beta-BHC	mg/kg	2	0.4	0.002	0.00067 U	0.0007 U	0.00068 U	0.00067 U	0.00048 U	0.00068 U	0.0007 U	0.0005 U	0.00049 U	0.00063 U	0.00064 U	0.00058 U	0.00065 U
delta-BHC	mg/kg	NS	NS	NS	0.00037 U	0.00039 U	0.00038 U	0.00038 U	0.0004 U	0.00038 U	0.0004 U	0.00041 U	0.00041 U	0.00036 U	0.00036 U	0.00033 U	0.00037 U
gamma-BHC (Lindane)	mg/kg	2	0.4	0.002	0.00042 U	0.00044 U	0.00043 U	0.00043 U	0.00031 U	0.00043 U	0.00045 U	0.00032 U	0.00032 U	0.0004 U	0.00041 U	0.00037 U	0.00041 U
alpha-Chlordane	mg/kg	NS	NS	NS	0.00046 U	0.00048 U	0.00047 U	0.00047 U	0.00045 U	0.00047 U	0.00049 U	0.00046 U	0.0031	0.00044 U	0.00044 U	0.0004 U	0.00045 U
gamma-Chlordane	mg/kg	NS	NS	NS	0.005	0.0066	0.00055 U	0.00054 U	0.00035 U	0.00055 U	0.00057 U	0.00036 U	0.0019	0.0021	0.00052 U	0.0015	0.00052 U
Dieldrin	mg/kg	0.2	0.04	0.003	0.00046 U	0.00048 U	0.00047 U	0.00047 U	0.00053 U	0.00047 U	0.0019	0.00055 U	0.00054 U	0.0024	0.0019	0.0004 U	0.00045 U
4,4'-DDD	mg/kg	13	3	3	0.00059 U	0.00062 U	0.0006 U	0.00059 U	0.00035 U	0.0006 U	0.0023	0.00036 U	0.00036 U	0.00056 U	0.0014	0.0019	0.0014
4,4'-DDE	mg/kg	9	2	12	0.00047 U	0.0005 U	0.00048 U	0.00048 U	0.0004 U	0.0026	0.0015	0.00042 U	0.00041 U	0.0057	0.00046 U	0.00041 U	0.00046 U
4,4'-DDT	mg/kg	8	2	7	0.0243	0.0188	0.0077	0.0044	0.0118	0.0233	0.0042	0.0029	0.0025	0.0038	0.0041	0.0017	0.00056 U
Endrin	mg/kg	340	23	0.6	0.00048 U	0.0005 U	0.00048 U	0.00048 U	0.00035 U	0.00048 U	0.0005 U	0.00036 U	0.00036 U	0.00045 U	0.00046 U	0.00041 U	0.00046 U
Endosulfan sulfate	mg/kg	6800	470	1	0.0049	0.00055 U	0.00053 U	0.00053 U	0.0023	0.00053 U	0.00055 U	0.00064 U	0.00063 U	0.0005 U	0.0005 U	0.00045 U	0.00051 U
Endrin aldehyde	mg/kg	NS	NS	NS	0.0099	0.0064	0.0032	0.00065 U	0.0105	0.00065 U	0.00068 U	0.00067 U	0.00066 U	0.00061 U	0.00062 U	0.00056 U	0.00063 U
Endosulfan-I	mg/kg	6800	470	2	0.00047 U	0.00049 U	0.00048 U	0.00047 U	0.00033 U	0.00048 U	0.00049 U	0.00034 U	0.00034 U	0.00045 U	0.00045 U	0.00041 U	0.00046 U
Endosulfan-II	mg/kg	6800	470	2	0.00052 U	0.00055 U	0.00053 U	0.00053 U	0.00045 U	0.00053 U	0.00055 U	0.00047 U	0.00046 U	0.0005 U	0.0005 U	0.00045 U	0.00051 U
Heptachlor	mg/kg	0.7	0.1	0.3	0.00062 U	0.00065 U	0.00063 U	0.00062 U	0.00042 U	0.00063 U	0.00065 U	0.00043 U	0.00043 U	0.00059 U	0.00059 U	0.00054 U	0.0006 U
Heptachlor epoxide	mg/kg	0.3	0.07	0.009	0.00053 U	0.00055 U	0.00054 U	0.00053 U	0.00034 U	0.00054 U	0.00056 U	0.00035 U	0.00034 U	0.0005 U	0.00051 U	0.00046 U	0.00051 U
Methoxychlor	mg/kg	5700	390	100	0.00061 U	0.00064 U	0.00062 U	0.00062 U	0.0256	0.0185	0.00065 U	0.0005 U	0.00049 U	0.00058 U	0.00059 U	0.00053 U	0.0006 U
Endrin ketone	mg/kg	NS	NS	NS	0.00049 U	0.00051 U	0.0005 U	0.00049 U	0.0498	0.0488	0.0046	0.00046 U	0.0019	0.00046 U	0.00047 U	0.00042 U	0.00047 U
Toxaphene	mg/kg	3	0.6	0.2	0.016 U	0.017 U	0.016 U	0.016 U	0.017 U	0.016 U	0.017 U	0.018 U	0.017 U	0.015 U	0.015 U	0.014 U	0.016 U
Herbicides																	
2,4-D	mg/kg	10000	NS	NS	0.0048 U	0.0056 U	0.0054 U	0.0054 U	0.0049 U	0.005 U	0.0051 U	0.005 U	0.0049 U	0.0046 U	0.0051 U	0.0046 U	0.0052 U
2,4,5-TP (Silvex)	mg/kg	1000	NS	NS	0.00058 U	0.00067 U	0.00065 U	0.00064 U	0.00059 U	0.0006 U	0.00062 U	0.0006 U	0.0006 U	0.00055 U	0.00061 U	0.00056 U	0.00063 U
2,4,5-T	mg/kg	1000	NS	NS	0.0015 U	0.0014 U	0.0013 U	0.0013 U	0.0015 U	0.0015 U	0.0016 U	0.0057	0.0015 U	0.0014 U	0.0012 U	0.0011 U	0.0013 U
Dalapon	mg/kg	NS	NS	NS	0.0011 U	0.0024 U	0.0024 U	0.0023 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0011 U	0.0022 U	0.002 U	0.0023 U
Dicamba	mg/kg	NS	NS	NS	0.00067 U	0.0018 U	0.0017 U	0.0017 U	0.00068 U	0.0007 U	0.00072 U	0.0007 U	0.0007 U	0.00064 U	0.0016 U	0.0015 U	0.0017 U
Dichloroprop	mg/kg	NS	NS	NS	0.0039 U	0.008 U	0.0078 U	0.0077 U	0.004 U	0.0041 U	0.0042 U	0.0041 U	0.004 U	0.0037 U	0.0073 U	0.0067 U	0.0076 U
Dinoseb	mg/kg	NS	NS	NS	0.0031 U	0.0047 U	0.0045 U	0.0045 U	0.0032 U	0.0032 U	0.0033 U	0.0032 U	0.0032 U	0.003 U	0.0042 U	0.0039 U	0.0044 U
MCPA	mg/kg	NS	NS	NS	0.52 U	0.86 U	0.83 U	0.83 U	0.53 U	0.54 U	0.56 U	0.54 U	0.54 U	0.5 U	0.78 U	0.71 U	0.81 U
MCPP	mg/kg	NS	NS	NS	0.27 U	0.43 U	0.41 U	0.41 U	0.27 U	0.28 U	0.29 U	0.28 U	0.28 U	0.26 U	0.39 U	0.36 U	0.4 U
Pentachlorophenol	mg/kg	10	3	0.3	0.0011 U	0.00034 U	0.00033 U	0.00033 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0011 U	0.00031 U	0.00028 U	0.00032 U
2,4-DB	mg/kg	NS	NS	NS	0.011 U	0.0075 U	0.0073 U	0.0073 U	0.011 U	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U	0.0069 U	0.0063 U	0.0071 U
Polychlorinated Biphenyls (PCBs)																	
Aroclor 1016	mg/kg	1	0.2	0.2	0.012 U	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.013 U	0.013 U	0.012 U	0.012 U	0.011 U	0.034 U
Aroclor 1221	mg/kg	1	0.2	0.2	0.023 U	0.024 U	0.023 U	0.023 U	0.023 U	0.023 U	0.024 U	0.023 U	0.023 U	0.022 U	0.022 U	0.02 U	0.02 U
Aroclor 1232	mg/kg	1	0.2	0.2	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.01 U	0.011 U	0.0096 U	0.017 U
Aroclor 1242	mg/kg	1	0.2	0.2	0.012 U	0.013 U	0.013 U	0.012 U	0.012 U	0.013 U	0.013 U	0.013 U	0.013 U	0.012 U	0.012 U	0.011 U	0.011 U
Aroclor 1248	mg/kg	1	0.2	0.2	0.0068 U	0.0071 U	0.0069 U	0.0069 U	0.0068 U	0.0069 U	0.0072 U	0.007 U	0.007 U	0.0065 U	0.0065 U	0.0059 U	0.01 U
Aroclor 1254	mg/kg	1	0.2	0.2	0.163	0.137	0.116	0.0502	0.0086 U	0.0596	0.0602	0.0089 U	0.0089 U	0.0726	0.0629	0.0437	0.04
Aroclor 1260	mg/kg	1	0.2	0.2	0.0897	0.047	0.014 U	0.013 U	0.013 U	0.014 U	0.014 U	0.014 U	0.014 U	0.0401	0.013 U	0.012 U	0.011 U
Aroclor 1268	mg/kg	1	0.2	0.2	0.0078 U	0.0081 U	0.0079 U	0.0078 U	0.0077 U	0.0079 U	0.0082 U	0.008 U	0.0079 U	0.0074 U	0.0075 U	0.0067 U	0.0099 U
Aroclor 1262	mg/kg	1	0.2	0.2	0.0069 U	0.0072 U	0.007 U	0.007 U	0.0069 U	0.007 U	0.0073 U	0.0071 U	0.0071 U	0.0066 U	0.0067 U	0.006 U	0.011 U

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-4: Pesticide, Herbicide, and PCB Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-03	AC-04	AC-04	AC-04	AC-04	AC-04	AC-04	SB-01	SB-01	SB-01	SB-01	SB-01	SB-02
Sample Depth Interval (ft					10.0 - 11.0	2.5 - 3.0	2.5 - 3.0	5.5 - 6.0	7.5 - 8.0	9.0 - 9.5	12.0 - 12.5	5.0 - 5.5	11.5 - 12.0	12.0 - 14.0	14.0 - 16.0	19.2 - 19.7	4.0 - 6.0
Client Sample ID:		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	AC-03.10.0-11.0	AC-04.02.5-03.0	DUP-08	AC-04.05.5-06.0	AC-04.07.5-08.0	AC-04.09.0-09.5	AC-04.12.0-12.5	SB-01.05.0-05.5	SB-01.11.5-12.0	SB-01.12.0-14.0	SB-01.14.0-16.0	SB-01.19.2-19.7	SB-02.04.0-06.0
Lab Sample ID:					JA74600-11	JA74720-3	JA74720-5	JA74720-7	JA74720-11	JA74720-9	JA74720-13	JA74168-25	JA74168-27	JA74168-29	JA74168-31	JA74168-33	JA74168-15
Date Sampled:					4/29/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Pesticides																	
Aldrin	mg/kg	0.2	0.04	0.1	0.00061 U	0.00058 U	0.00058 U	0.00059 U	0.00057 U	0.00064 U	0.0006 U	0.00057 U	0.00059 U	0.00052 U	0.00058 U	0.00068 U	0.0017 U
alpha-BHC	mg/kg	0.5	0.1	0.002	0.00042 U	0.0004 U	0.0004 U	0.00041 U	0.00039 U	0.00044 U	0.00042 U	0.00039 U	0.00041 U	0.00036 U	0.0004 U	0.00047 U	0.0012 U
beta-BHC	mg/kg	2	0.4	0.002	0.00066 U	0.00063 U	0.00063 U	0.00064 U	0.00062 U	0.0007 U	0.00065 U	0.00062 U	0.00064 U	0.00056 U	0.00063 U	0.00074 U	0.0019 U
delta-BHC	mg/kg	NS	NS	NS	0.00037 U	0.00036 U	0.00035 U	0.00036 U	0.00035 U	0.00039 U	0.00037 U	0.00035 U	0.00036 U	0.00032 U	0.00035 U	0.00041 U	0.0011 U
gamma-BHC (Lindane)	mg/kg	2	0.4	0.002	0.00042 U	0.0004 U	0.0004 U	0.00041 U	0.00039 U	0.00044 U	0.00042 U	0.00039 U	0.00041 U	0.00036 U	0.0004 U	0.00047 U	0.0012 U
alpha-Chlordane	mg/kg	NS	NS	NS	0.00046 U	0.00044 U	0.00044 U	0.00045 U	0.00043 U	0.00048 U	0.00045 U	0.00043 U	0.00045 U	0.00039 U	0.00044 U	0.00051 U	0.0013 U
gamma-Chlordane	mg/kg	NS	NS	NS	0.0039	0.00051 U	0.00051 U	0.00052 U	0.0005 U	0.00056 U	0.00053 U	0.0005 U	0.00052 U	0.00045 U	0.00051 U	0.00059 U	0.0015 U
Dieldrin	mg/kg	0.2	0.04	0.003	0.0029	0.00044 U	0.00044 U	0.00045 U	0.00043 U	0.00048 U	0.00045 U	0.00043 U	0.00045 U	0.00039 U	0.00044 U	0.00051 U	0.0013 U
4,4'-DDD	mg/kg	13	3	3	0.0056	0.00056 U	0.00056 U	0.00057 U	0.00054 U	0.00061 U	0.00058 U	0.0013	0.00057 U	0.0005 U	0.0018	0.00065 U	0.0016 U
4,4'-DDE	mg/kg	9	2	12	0.0036	0.00045 U	0.00045 U	0.00046 U	0.00044 U	0.0005 U	0.00047 U	0.00044 U	0.00046 U	0.0004 U	0.00045 U	0.00052 U	0.0013 U
4,4'-DDT	mg/kg	8	2	7	0.00057 U	0.00055 U	0.0014	0.00055 U	0.00053 U	0.0006 U	0.00057 U	0.0165	0.0152	0.0084	0.0072	0.00064 U	0.0016 U
Endrin	mg/kg	340	23	0.6	0.00047 U	0.00045 U	0.00045 U	0.00046 U	0.00044 U	0.0005 U	0.00047 U	0.00044 U	0.00046 U	0.0004 U	0.00045 U	0.00053 U	0.0013 U
Endosulfan sulfate	mg/kg	6800	470	1	0.00052 U	0.0005 U	0.0005 U	0.0005 U	0.00049 U	0.00055 U	0.00051 U	0.00049 U	0.00051 U	0.00044 U	0.00049 U	0.00058 U	0.0015 U
Endrin aldehyde	mg/kg	NS	NS	NS	0.0037	0.00061 U	0.00061 U	0.00062 U	0.0006 U	0.00067 U	0.00063 U	0.0006 U	0.00062 U	0.00054 U	0.00061 U	0.00071 U	0.0018 U
Endosulfan-I	mg/kg	6800	470	2	0.00047 U	0.00044 U	0.00044 U	0.00045 U	0.00043 U	0.00049 U	0.00046 U	0.00044 U	0.00045 U	0.0004 U	0.00044 U	0.00052 U	0.0013 U
Endosulfan-II	mg/kg	6800	470	2	0.00052 U	0.0005 U	0.0005 U	0.0005 U	0.00049 U	0.00055 U	0.00051 U	0.00049 U	0.00051 U	0.00044 U	0.00049 U	0.00058 U	0.0015 U
Heptachlor	mg/kg	0.7	0.1	0.3	0.00061 U	0.00059 U	0.00058 U	0.0006 U	0.00057 U	0.00065 U	0.00061 U	0.00057 U	0.0006 U	0.00052 U	0.00058 U	0.00068 U	0.0017 U
Heptachlor epoxide	mg/kg	0.3	0.07	0.009	0.00052 U	0.0005 U	0.0005 U	0.00051 U	0.00049 U	0.00055 U	0.00052 U	0.00049 U	0.00051 U	0.00045 U	0.0005 U	0.00058 U	0.0015 U
Methoxychlor	mg/kg	5700	390	100	0.00061 U	0.00058 U	0.00058 U	0.00059 U	0.00057 U	0.00064 U	0.0006 U	0.00057 U	0.00059 U	0.00052 U	0.00058 U	0.00068 U	0.0017 U
Endrin ketone	mg/kg	NS	NS	NS	0.00048 U	0.00046 U	0.00046 U	0.00047 U	0.00045 U	0.00051 U	0.00048 U	0.00045 U	0.00047 U	0.00041 U	0.00046 U	0.00054 U	0.0014 U
Toxaphene	mg/kg	3	0.6	0.2	0.016 U	0.015 U	0.015 U	0.015 U	0.015 U	0.017 U	0.016 U	0.015 U	0.015 U	0.014 U	0.015 U	0.018 U	0.045 U
Herbicides																	
2,4-D	mg/kg	10000	NS	NS	0.0053 U	0.0051 U	0.005 U	0.0051 U	0.0419	0.0056 U	0.0052 U	0.0051 U	0.005 U	0.0051 U	0.011 U	0.0051 U	0.0059 U
2,4,5-TP (Silvex)	mg/kg	1000	NS	NS	0.00063 U	0.00061 U	0.0006 U	0.00062 U	0.00059 U	0.00067 U	0.00063 U	0.00061 U	0.00059 U	0.00062 U	0.0013 U	0.00061 U	0.0007 U
2,4,5-T	mg/kg	1000	NS	NS	0.0013 U	0.0013 U	0.0012 U	0.0013 U	0.0012 U	0.0014 U	0.0013 U	0.0012 U	0.0012 U	0.0013 U	0.0026 U	0.0013 U	0.0014 U
Dalapon	mg/kg	NS	NS	NS	0.0023 U	0.0022 U	0.0022 U	0.0022 U	0.0022 U	0.0024 U	0.0023 U	0.0022 U	0.0022 U	0.0022 U	0.0047 U	0.0022 U	0.0026 U
Dicamba	mg/kg	NS	NS	NS	0.0017 U	0.0016 U	0.0016 U	0.0016 U	0.0016 U	0.0018 U	0.0017 U	0.0016 U	0.0016 U	0.0016 U	0.0034 U	0.0016 U	0.0019 U
Dichloroprop	mg/kg	NS	NS	NS	0.0076 U	0.0073 U	0.0073 U	0.0074 U	0.0071 U	0.0081 U	0.0076 U	0.0073 U	0.0071 U	0.0074 U	0.015 U	0.0074 U	0.0085 U
Dinoseb	mg/kg	NS	NS	NS	0.0044 U	0.0043 U	0.0042 U	0.0043 U	0.0041 U	0.0047 U	0.0044 U	0.0042 U	0.0041 U	0.0043 U	0.0089 U	0.0043 U	0.0049 U
MCPA	mg/kg	NS	NS	NS	0.82 U	0.79 U	0.78 U	0.79 U	0.76 U	0.86 U	0.81 U	0.78 U	0.76 U	0.79 U	1.6 U	0.79 U	0.91 U
MCPP	mg/kg	NS	NS	NS	0.41 U	0.39 U	0.39 U	0.4 U	0.38 U	0.43 U	0.4 U	0.39 U	0.38 U	0.39 U	0.82 U	0.39 U	0.45 U
Pentachlorophenol	mg/kg	10	3	0.3	0.00032 U	0.00031 U	0.00031 U	0.00031 U	0.0003 U	0.00034 U	0.00032 U	0.00031 U	0.0003 U	0.00031 U	0.00065 U	0.00031 U	0.00036 U
2,4-DB	mg/kg	NS	NS	NS	0.0072 U	0.0069 U	0.0068 U	0.007 U	0.0067 U	0.0076 U	0.0071 U	0.0069 U	0.0067 U	0.007 U	0.014 U	0.0069 U	0.008 U
Polychlorinated Biphenyls (PCBs)																	
Aroclor 1016	mg/kg	1	0.2	0.2	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U	0.013 U	0.012 U	0.011 U	0.012 U	0.01 U	0.012 U	0.013 U	0.034 U
Aroclor 1221	mg/kg	1	0.2	0.2	0.023 U	0.022 U	0.021 U	0.022 U	0.021 U	0.024 U	0.022 U	0.021 U	0.022 U	0.019 U	0.022 U	0.025 U	0.064 U
Aroclor 1232	mg/kg	1	0.2	0.2	0.011 U	0.01 U	0.01 U	0.011 U	0.01 U	0.012 U	0.011 U	0.01 U	0.011 U	0.0094 U	0.011 U	0.012 U	0.031 U
Aroclor 1242	mg/kg	1	0.2	0.2	0.012 U	0.012 U	0.012 U	0.012 U	0.011 U	0.013 U	0.012 U	0.011 U	0.012 U	0.01 U	0.012 U	0.014 U	0.035 U
Aroclor 1248	mg/kg	1	0.2	0.2	0.0068 U	0.0065 U	0.0064 U	0.0066 U	0.0063 U	0.0071 U	0.0067 U	0.0063 U	0.0066 U	0.0058 U	0.0065 U	0.0075 U	0.019 U
Aroclor 1254	mg/kg	1	0.2	0.2	0.0086 U	0.0082 U	0.0082 U	0.0083 U	0.008 U	0.0091 U	0.0085 U	0.0793	0.0083 U	0.0563	0.0395	0.0095 U	0.024 U
Aroclor 1260	mg/kg	1	0.2	0.2	0.0663	0.013 U	0.013 U	0.013 U	0.012 U	0.014 U	0.013 U	0.062	0.0411	0.059	0.013 U	0.015 U	0.037 U
Aroclor 1268	mg/kg	1	0.2	0.2	0.0077 U	0.0074 U	0.0073 U	0.0075 U	0.0072 U	0.0081 U	0.0076 U	0.0072 U	0.0075 U	0.0066 U	0.0074 U	0.0085 U	0.022 U
Aroclor 1262	mg/kg	1	0.2	0.2	0.0069 U	0.0066 U	0.0065 U	0.0067 U	0.0064 U	0.0072 U	0.0068 U	0.0064 U	0.0067 U	0.0059 U	0.0066 U	0.0076 U	0.019 U

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-4: Pesticide, Herbicide, and PCB Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		**PROJECT SCREENING LEVELS**			**SB-02**	**SB-02**	**SB-02**	**SB-02**	**SB-03**	**SB-03**	**SB-03**	**SB-03**	**SB-03**	**SB-03**	**SB-04**	**SB-04**	**SB-04**
Sample Depth Interval (ft					**11.0 - 11.5**	**12.0 - 14.0**	**14.0 - 16.0**	**19.5 - 20.0**	**5.5 - 6.0**	**11.5 - 12.0**	**12.0 - 14.0**	**16.0 - 18.0**	**16.0 - 18.0**	**18.0 - 19.3**	**5.5 - 6.0**	**7.5 - 8.0**	**8.5 - 9.0**
Client Sample ID:		**NJ Non-Residential Direct Contact Soil Remediation Standard**	**NJ Residential Direct Contact Soil Remediation Standard**	**NJ Default Impact to Groundwater Soil Screening Level**	**SB-02.11.0-11.5**	**SB-02.12.0-14.0**	**SB-02.14.0-16.0**	**SB-02.19.5-20.0**	**SB-03.05.5-06.0**	**SB-03.11.5-12.0**	**SB-03.12.0-14.0**	**SB-03.16.0-18.0**	**DUP-02**	**SB-03.18.0-19.3**	**SB-04.05.5-06.0**	**SB-04.07.5-08.0**	**SB-04.08.5-09.0**
Lab Sample ID:					**JA74168-19**	**JA74168-17**	**JA74168-21**	**JA74168-23**	**JA74168-3**	**JA74168-5**	**JA74168-7**	**JA74168-9**	**JA74168-11**	**JA74168-13**	**JA75102-15**	**JA75102-17**	**JA75102-19**
Date Sampled:					**4/26/2011**	**4/26/2011**	**4/26/2011**	**4/26/2011**	**4/26/2011**	**4/26/2011**	**4/26/2011**	**4/26/2011**	**4/26/2011**	**4/26/2011**	**5/5/2011**	**5/5/2011**	**5/5/2011**
Matrix:					**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Pesticides																	
Aldrin	mg/kg	0.2	0.04	0.1	0.0006 U	0.00061 U	0.00061 U	0.00068 U	0.00059 U	0.00061 U	0.00062 U	0.0006 U	0.0006 U	0.0006 U	0.00033 U	0.00035 U	0.00035 U
alpha-BHC	mg/kg	0.5	0.1	0.002	0.00041 U	0.00042 U	0.00042 U	0.00047 U	0.0004 U	0.00042 U	0.00043 U	0.00041 U	0.00041 U	0.00042 U	0.00049 U	0.00053 U	0.00053 U
beta-BHC	mg/kg	2	0.4	0.002	0.00065 U	0.00066 U	0.00066 U	0.00074 U	0.00064 U	0.00066 U	0.00067 U	0.00065 U	0.00065 U	0.00065 U	0.00046 U	0.00049 U	0.00049 U
delta-BHC	mg/kg	NS	NS	NS	0.00036 U	0.00037 U	0.00037 U	0.00041 U	0.00036 U	0.00037 U	0.00038 U	0.00037 U	0.00037 U	0.00037 U	0.00038 U	0.00041 U	0.00041 U
gamma-BHC (Lindane)	mg/kg	2	0.4	0.002	0.00041 U	0.00042 U	0.00042 U	0.00047 U	0.0004 U	0.00042 U	0.00043 U	0.00041 U	0.00041 U	0.00042 U	0.0003 U	0.00032 U	0.00032 U
alpha-Chlordane	mg/kg	NS	NS	NS	0.00045 U	0.00046 U	0.00046 U	0.00051 U	0.00044 U	0.00046 U	0.00047 U	0.00045 U	0.00045 U	0.00045 U	0.00043 U	0.00046 U	0.00046 U
gamma-Chlordane	mg/kg	NS	NS	NS	0.00052 U	0.00053 U	0.00053 U	0.00059 U	0.00051 U	0.00053 U	0.00054 U	0.00053 U	0.00052 U	0.00053 U	0.00033 U	0.00036 U	0.00036 U
Dieldrin	mg/kg	0.2	0.04	0.003	0.00045 U	0.00046 U	0.00046 U	0.00051 U	0.00044 U	0.00046 U	0.00047 U	0.00045 U	0.00045 U	0.00045 U	0.00051 U	0.00054 U	0.00054 U
4,4'-DDD	mg/kg	13	3	3	0.00057 U	0.00059 U	0.00058 U	0.00065 U	0.00056 U	0.00058 U	0.00059 U	0.00057 U	0.00057 U	0.00058 U	0.0044	0.00036 U	0.00036 U
4,4'-DDE	mg/kg	9	2	12	0.00046 U	0.00047 U	0.00047 U	0.00053 U	0.00045 U	0.00047 U	0.00048 U	0.00046 U	0.00046 U	0.00047 U	0.00039 U	0.00041 U	0.00041 U
4,4'-DDT	mg/kg	8	2	7	0.00056 U	0.0295	0.0593	0.0651	0.00055 U	0.0018	0.00058 U	0.00056 U	0.00056 U	0.00056 U	0.0184	0.00051 U	0.0095
Endrin	mg/kg	340	23	0.6	0.00046 U	0.00047 U	0.00047 U	0.00053 U	0.00045 U	0.00047 U	0.00048 U	0.00047 U	0.00046 U	0.00047 U	0.00033 U	0.00036 U	0.00036 U
Endosulfan sulfate	mg/kg	6800	470	1	0.00051 U	0.00052 U	0.00052 U	0.00058 U	0.0005 U	0.00052 U	0.00053 U	0.00051 U	0.00051 U	0.00051 U	0.00059 U	0.00064 U	0.00063 U
Endrin aldehyde	mg/kg	NS	NS	NS	0.00063 U	0.00064 U	0.00064 U	0.00071 U	0.00061 U	0.00064 U	0.00065 U	0.00063 U	0.00063 U	0.00063 U	0.0094	0.00067 U	0.0074
Endosulfan-I	mg/kg	6800	470	2	0.00046 U	0.00047 U	0.00047 U	0.00052 U	0.00045 U	0.00046 U	0.00047 U	0.00046 U	0.00046 U	0.00046 U	0.00032 U	0.00034 U	0.00034 U
Endosulfan-II	mg/kg	6800	470	2	0.00051 U	0.00052 U	0.00052 U	0.00058 U	0.0005 U	0.00052 U	0.00053 U	0.00051 U	0.00051 U	0.00051 U	0.00043 U	0.00046 U	0.00046 U
Heptachlor	mg/kg	0.7	0.1	0.3	0.0006 U	0.00062 U	0.00061 U	0.00068 U	0.00059 U	0.00061 U	0.00062 U	0.0006 U	0.0006 U	0.00061 U	0.0004 U	0.00043 U	0.00043 U
Heptachlor epoxide	mg/kg	0.3	0.07	0.009	0.00051 U	0.00053 U	0.00052 U	0.00058 U	0.0005 U	0.00052 U	0.00053 U	0.00052 U	0.00051 U	0.00052 U	0.00032 U	0.00035 U	0.00035 U
Methoxychlor	mg/kg	5700	390	100	0.0006 U	0.00061 U	0.00061 U	0.00068 U	0.00058 U	0.00061 U	0.00062 U	0.0006 U	0.0006 U	0.0006 U	0.00046 U	0.0005 U	0.00049 U
Endrin ketone	mg/kg	NS	NS	NS	0.00047 U	0.00048 U	0.00048 U	0.00054 U	0.00046 U	0.00048 U	0.00049 U	0.00048 U	0.00047 U	0.00048 U	0.00043 U	0.00046 U	0.00046 U
Toxaphene	mg/kg	3	0.6	0.2	0.016 U	0.016 U	0.016 U	0.018 U	0.015 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.018 U	0.018 U
Herbicides																	
2,4-D	mg/kg	10000	NS	NS	0.011 U	0.0052 U	0.0054 U	0.0054 U	0.0059 U	0.0051 U	0.0053 U	0.0049 U	0.0052 U	0.0052 U	0.0052 U	0.0046 U	0.0049 U
2,4,5-TP (Silvex)	mg/kg	1000	NS	NS	0.0013 U	0.00063 U	0.00065 U	0.00064 U	0.00071 U	0.00061 U	0.00063 U	0.00059 U	0.00063 U	0.00062 U	0.00062 U	0.00056 U	0.0006 U
2,4,5-T	mg/kg	1000	NS	NS	0.0026 U	0.0013 U	0.0013 U	0.0013 U	0.0015 U	0.0013 U	0.0013 U	0.0015 U	0.0013 U	0.0013 U	0.0013 U	0.0014 U	0.0015 U
Dalapon	mg/kg	NS	NS	NS	0.0047 U	0.0023 U	0.0023 U	0.0023 U	0.0026 U	0.0022 U	0.0023 U	0.0012 U	0.0023 U	0.0023 U	0.0023 U	0.0011 U	0.0012 U
Dicamba	mg/kg	NS	NS	NS	0.0034 U	0.0017 U	0.0017 U	0.0017 U	0.0019 U	0.0016 U	0.0017 U	0.00068 U	0.0017 U	0.0017 U	0.0017 U	0.00065 U	0.0007 U
Dichloroprop	mg/kg	NS	NS	NS	0.015 U	0.0075 U	0.0078 U	0.0077 U	0.0085 U	0.0074 U	0.0076 U	0.004 U	0.0075 U	0.0075 U	0.0075 U	0.0038 U	0.004 U
Dinoseb	mg/kg	NS	NS	NS	0.0089 U	0.0044 U	0.0045 U	0.0045 U	0.0049 U	0.0043 U	0.0044 U	0.0032 U	0.0044 U	0.0044 U	0.0043 U	0.003 U	0.0032 U
MCPA	mg/kg	NS	NS	NS	1.6 U	0.8 U	0.83 U	0.83 U	0.91 U	0.79 U	0.82 U	0.53 U	0.81 U	0.8 U	0.8 U	0.5 U	0.54 U
MCPP	mg/kg	NS	NS	NS	0.82 U	0.4 U	0.41 U	0.41 U	0.45 U	0.39 U	0.41 U	0.27 U	0.4 U	0.4 U	0.4 U	0.26 U	0.28 U
Pentachlorophenol	mg/kg	10	3	0.3	0.00065 U	0.00032 U	0.00033 U	0.00033 U	0.00036 U	0.00031 U	0.00032 U	0.0026	0.00032 U	0.00032 U	0.00032 U	0.0011 U	0.0012 U
2,4-DB	mg/kg	NS	NS	NS	0.014 U	0.0071 U	0.0073 U	0.0073 U	0.008 U	0.0069 U	0.0072 U	0.011 U	0.0071 U	0.0071 U	0.007 U	0.011 U	0.012 U
Polychlorinated Biphenyls (PCBs)																	
Aroclor 1016	mg/kg	1	0.2	0.2	0.012 U	0.012 U	0.012 U	0.014 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.013 U
Aroclor 1221	mg/kg	1	0.2	0.2	0.022 U	0.023 U	0.023 U	0.025 U	0.022 U	0.022 U	0.023 U	0.022 U	0.022 U	0.022 U	0.022 U	0.023 U	0.023 U
Aroclor 1232	mg/kg	1	0.2	0.2	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Aroclor 1242	mg/kg	1	0.2	0.2	0.012 U	0.012 U	0.012 U	0.014 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.013 U
Aroclor 1248	mg/kg	1	0.2	0.2	0.0066 U	0.0068 U	0.0068 U	0.0075 U	0.0065 U	0.0067 U	0.0069 U	0.0067 U	0.0066 U	0.0067 U	0.0065 U	0.007 U	0.007 U
Aroclor 1254	mg/kg	1	0.2	0.2	0.0084 U	0.134	**1.46**	**0.653**	0.0083 U	0.0086 U	0.0087 U	0.0085 U	0.0084 U	0.0085 U	0.0785	0.0088 U	0.0088 U
Aroclor 1260	mg/kg	1	0.2	0.2	0.0407	0.0957	0.013 U	**0.211**	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.037	**5.67**	0.014 U
Aroclor 1268	mg/kg	1	0.2	0.2	0.0076 U	0.0077 U	0.0077 U	0.0086 U	0.0074 U	0.0077 U	0.0078 U	0.0076 U	0.0076 U	0.0076 U	0.0074 U	0.0079 U	0.0079 U
Aroclor 1262	mg/kg	1	0.2	0.2	0.0067 U	0.0069 U	0.0069 U	0.0077 U	0.0066 U	0.0069 U	0.007 U	0.0068 U	0.0067 U	0.0068 U	0.0066 U	0.0071 U	0.0071 U

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-4: Pesticide, Herbicide, and PCB Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-04	SB-04	SB-05	SB-05	SB-05	SB-05	SB-05	SB-05
Sample Depth Interval (ft		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	13.5 - 14.0	17.3 - 17.8	5.0 - 5.5	7.5 - 8.0	7.5 - 8.0	8.5 - 9.0	12.5 - 13.0	14.7 - 15.2
Client Sample ID:					SB-04.13.5-14.0	SB-04.17.3-17.8	SB-05.05.0-05.5	SB-05.07.5-08.0	DUP-10	SB-05.08.5-09.0	SB-05.12.5-13.0	SB-05.14.7-15.2
Lab Sample ID:					JA75102-21	JA75102-23	JA75102-3	JA75102-5	JA75102-7	JA75102-9	JA75102-11	JA75102-13
Date Sampled:					5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Pesticides												
Aldrin	mg/kg	0.2	0.04	0.1	0.00037 U	0.00061 U	0.00033 U	0.00033 U	0.00032 U	0.00036 U	0.00063 U	0.00062 U
alpha-BHC	mg/kg	0.5	0.1	0.002	0.00055 U	0.00042 U	0.0005 U	0.0005 U	0.00049 U	0.00055 U	0.00044 U	0.00043 U
beta-BHC	mg/kg	2	0.4	0.002	0.00051 U	0.00066 U	0.00046 U	0.00047 U	0.00046 U	0.00051 U	0.00069 U	0.00067 U
delta-BHC	mg/kg	NS	NS	NS	0.00043 U	0.00037 U	0.00039 U	0.00039 U	0.00038 U	0.00043 U	0.00039 U	0.00038 U
gamma-BHC (Lindane)	mg/kg	2	0.4	0.002	0.00033 U	0.00042 U	0.0003 U	0.0003 U	0.0003 U	0.00033 U	0.00044 U	0.00043 U
alpha-Chlordane	mg/kg	NS	NS	NS	0.00048 U	0.00046 U	0.00043 U	0.00043 U	0.0028	0.00048 U	0.00048 U	0.00047 U
gamma-Chlordane	mg/kg	NS	NS	NS	0.0032	0.00054 U	0.00034 U	0.00034 U	0.0059	0.0049	0.00055 U	0.00054 U
Dieldrin	mg/kg	0.2	0.04	0.003	0.0053	0.00046 U	0.00051 U	0.00052 U	0.0005 U	0.00056 U	0.00048 U	0.00047 U
4,4'-DDD	mg/kg	13	3	3	0.003	0.00059 U	0.0031	0.0029	0.0094	0.0049	0.00061 U	0.00059 U
4,4'-DDE	mg/kg	9	2	12	0.0079	0.00047 U	0.00039 U	0.0065	0.00038 U	0.00043 U	0.00049 U	0.00048 U
4,4'-DDT	mg/kg	8	2	7	0.0162	0.00057 U	0.0094	0.014	0.0179	0.0145	0.00059 U	0.00058 U
Endrin	mg/kg	340	23	0.6	0.00037 U	0.00047 U	0.00034 U	0.00034 U	0.00033 U	0.00037 U	0.00049 U	0.00048 U
Endosulfan sulfate	mg/kg	6800	470	1	0.00066 U	0.00052 U	0.0006 U	0.0006 U	0.00059 U	0.00066 U	0.00054 U	0.00053 U
Endrin aldehyde	mg/kg	NS	NS	NS	0.00069 U	0.00064 U	0.0038	0.0142	0.0051	0.004	0.00066 U	0.00065 U
Endosulfan-I	mg/kg	6800	470	2	0.00035 U	0.00047 U	0.00032 U	0.00032 U	0.00031 U	0.00035 U	0.00048 U	0.00047 U
Endosulfan-II	mg/kg	6800	470	2	0.00048 U	0.00052 U	0.00044 U	0.00044 U	0.00043 U	0.00048 U	0.00054 U	0.00053 U
Heptachlor	mg/kg	0.7	0.1	0.3	0.00045 U	0.00062 U	0.00041 U	0.00041 U	0.0004 U	0.00045 U	0.00064 U	0.00063 U
Heptachlor epoxide	mg/kg	0.3	0.07	0.009	0.00036 U	0.00053 U	0.00033 U	0.00033 U	0.00032 U	0.00036 U	0.00054 U	0.00053 U
Methoxychlor	mg/kg	5700	390	100	0.0061	0.00061 U	0.0061	0.0076	0.00046 U	0.00052 U	0.00063 U	0.00062 U
Endrin ketone	mg/kg	NS	NS	NS	0.0037	0.00049 U	0.00043 U	0.00043 U	0.00042 U	0.00047 U	0.0005 U	0.00049 U
Toxaphene	mg/kg	3	0.6	0.2	0.018 U	0.016 U	0.017 U	0.017 U	0.016 U	0.018 U	0.016 U	0.016 U
Herbicides												
2,4-D	mg/kg	10000	NS	NS	0.0049 U	0.0052 U	0.0048 U	0.0047 U	0.0047 U	0.0051 U	0.005 U	0.0049 U
2,4,5-TP (Silvex)	mg/kg	1000	NS	NS	0.0006 U	0.00062 U	0.00058 U	0.00056 U	0.00057 U	0.00062 U	0.0006 U	0.00059 U
2,4,5-T	mg/kg	1000	NS	NS	0.0015 U	0.0016 U	0.0015 U	0.0014 U	0.0014 U	0.0016 U	0.0015 U	0.0015 U
Dalapon	mg/kg	NS	NS	NS	0.0012 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U
Dicamba	mg/kg	NS	NS	NS	0.00069 U	0.00072 U	0.00068 U	0.00066 U	0.00066 U	0.00072 U	0.0007 U	0.00069 U
Dichloroprop	mg/kg	NS	NS	NS	0.004 U	0.0042 U	0.0039 U	0.0038 U	0.0038 U	0.0042 U	0.0041 U	0.004 U
Dinoseb	mg/kg	NS	NS	NS	0.0032 U	0.0033 U	0.0031 U	0.003 U	0.003 U	0.0033 U	0.0032 U	0.0032 U
MCPA	mg/kg	NS	NS	NS	0.54 U	0.56 U	0.53 U	0.51 U	0.51 U	0.56 U	0.54 U	0.53 U
MCPP	mg/kg	NS	NS	NS	0.28 U	0.29 U	0.27 U	0.26 U	0.26 U	0.29 U	0.28 U	0.28 U
Pentachlorophenol	mg/kg	10	3	0.3	0.0012 U	0.0012 U	0.0011 U	0.0011 U	0.0019	0.0012 U	0.0012 U	0.0011 U
2,4-DB	mg/kg	NS	NS	NS	0.012 U	0.012 U	0.011 U	0.011 U	0.011 U	0.012 U	0.012 U	0.012 U
Polychlorinated Biphenyls (PCBs)												
Aroclor 1016	mg/kg	1	0.2	0.2	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U	0.0095 U	0.013 U	0.012 U
Aroclor 1221	mg/kg	1	0.2	0.2	0.024 U	0.023 U	0.022 U	0.022 U	0.021 U	0.022 U	0.023 U	0.023 U
Aroclor 1232	mg/kg	1	0.2	0.2	0.012 U	0.011 U	0.011 U	0.011 U	0.01 U	0.018 U	0.011 U	0.011 U
Aroclor 1242	mg/kg	1	0.2	0.2	0.013 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.012 U
Aroclor 1248	mg/kg	1	0.2	0.2	0.0073 U	0.0068 U	0.0066 U	0.0066 U	0.0064 U	0.011 U	0.007 U	0.0069 U
Aroclor 1254	mg/kg	1	0.2	0.2	0.0092 U	0.0086 U	0.0469	0.0948	0.123	0.126	0.0089 U	0.0088 U
Aroclor 1260	mg/kg	1	0.2	0.2	0.13	0.013 U	0.013 U	0.0386	0.0493	0.0368	0.014 U	0.014 U
Aroclor 1268	mg/kg	1	0.2	0.2	0.0083 U	0.0077 U	0.0075 U	0.0075 U	0.0073 U	0.011 U	0.008 U	0.0078 U
Aroclor 1262	mg/kg	1	0.2	0.2	0.0074 U	0.0069 U	0.0067 U	0.0067 U	0.0066 U	0.012 U	0.0071 U	0.007 U

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard NA - Not analyzed
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-5: Oil & Grease and EPH Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		**PROJECT SCREENING LEVELS**			**AC-01**	**AC-01**	**AC-01**	**AC-01**	**AC-02**	**AC-02**	**AC-02**	**AC-02**	**AC-02**	**AC-02**	**AC-03**	**AC-03**	**AC-03**
Sample Depth Interval (ft bgs)		**NJ Non-Residential Direct Contact Soil Remediation Standard**	**NJ Residential Direct Contact Soil Remediation Standard**	**NJ Default Impact to Groundwater Soil Screening Level**	**7.5 - 8.0**	**14.0 - 14.5**	**18.0 - 20.0**	**18.0 - 20.0**	**6.0 - 8.0**	**8.5 - 9.0**	**12.0 - 12.5**	**15.0 - 15.5**	**17.5 - 18.0**	**17.5 - 18.0**	**5.5 - 6.0**	**6.0 - 8.0**	**9.0 - 9.5**
Client Sample ID:					**AC-01.07.5-08.0**	**AC-01.14.0-14.5**	**AC-01.18.0-20.0**	**DUP-04**	**AC-02. 06.0-08.0**	**AC-02. 08.5-09.0**	**AC-02. 12.0-12.5**	**AC-02. 15.0-15.5**	**AC-02. 17.5-18.0**	**DUP-10**	**AC-03.05.5-06.0**	**AC-03.06.0-08.0**	**AC-03.09.0-09.5**
Lab Sample ID:					**JA74273-4**	**JA74273-6**	**JA74273-8**	**JA74273-10**	**JA74821-3**	**JA74821-5**	**JA74821-7**	**JA74821-9**	**JA74821-11**	**JA75102-7**	**JA74600-3**	**JA74600-7**	**JA74600-9**
Date Sampled:					**4/27/2011**	**4/27/2011**	**4/27/2011**	**4/27/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**5/5/2011**	**4/29/2011**	**4/29/2011**	**4/29/2011**
Matrix:					**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Oil & Grease																	
Oil and Grease	mg/kg	NS	NS	NS	1060	309 B	327 B	664	993 B	602	139 B	368 B	170 B	658	642	500 B	635
NJDEP EPH																	
C10-C12 Aromatics	mg/kg	NS	NS	NS	0.18 U	0.19 U	0.19 U	0.19 U	0.18 U	0.19 U	0.2 U	0.19 U	0.19 U	0.17 U	0.17 U	0.16 U	65.5
C12-C16 Aromatics	mg/kg	NS	NS	NS	0.39 U	46.3	19.7	17.1	0.39 U	0.4 U	0.41 U	0.4 U	0.4 U	0.37 U	0.37 U	0.34 U	73.9
C16-C21 Aromatics	mg/kg	NS	NS	NS	21.2	244	89.9	77.7	54.9	114	30.7	0.71 U	19.8	14.3	11.1	12.6	33
C21-C36 Aromatics	mg/kg	NS	NS	NS	99.4	162	69.1	99.4	128	184	132	1.1 U	58.1	138	58.3	65.8	124
Total Aromatics	mg/kg	NS	NS	NS	121	453	179	194	183	298	163	0.19 U	77.9	152	69.4	78.4	297
C9-C12 Aliphatics	mg/kg	NS	NS	NS	0.14 U	31.2	15.1	14.3	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.13 U	0.13 U	0.12 U	109
C12-C16 Aliphatics	mg/kg	NS	NS	NS	0.22 U	177	91.3	98.1	0.22 U	0.22 U	0.23 U	0.22 U	0.22 U	0.21 U	0.21 U	0.19 U	56.8
C16-C21 Aliphatics	mg/kg	NS	NS	NS	0.29 U	183	104	125	0.29 U	0.3 U	0.3 U	0.3 U	0.29 U	0.27 U	5.03 J	0.25 U	0.28 U
C21-C40 Aliphatics	mg/kg	NS	NS	NS	79.1	71.1	113	138	0.58 U	0.6 U	82.8	0.6 U	0.59 U	0.55 U	53.6	37.1	99.4
Total Aliphatics	mg/kg	NS	NS	NS	79.1	462	324	376	0.14 U	0.14 U	82.8	0.14 U	0.14 U	0.13 U	58.7	37.1	265
Total EPH	mg/kg	NS	NS	NS	200	914	503	570	183	298	246	5.7 U	77.9	152	128	115	562

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-5: Oil & Grease and EPH Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-03	AC-03	AC-04	AC-04	AC-04	AC-04	AC-04	AC-04	SB-01	SB-01	SB-01	SB-01	SB-01
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	10.0 - 11.0	10.0 - 11.0	2.5 - 3.0	5.5 - 6.0	7.5 - 8.0	9.0 - 9.5	12.0 - 12.5	12.0 - 12.5	5.0 - 5.5	11.5 - 12.0	12.0 - 14.0	14.0 - 16.0	19.2 - 19.7
Client Sample ID:					AC-03.10.0-11.0	DUP-06	AC-04.02.5-03.0	AC-04.05.5-06.0	AC-04.07.5-08.0	AC-04.09.0-09.5	AC-04.12.0-12.5	DUP-08	SB-01.05.0-05.5	SB-01.11.5-12.0	SB-01.12.0-14.0	SB-01.14.0-16.0	SB-01.19.2-19.7
Lab Sample ID:					JA74600-11	JA74600-5	JA74720-3	JA74720-7	JA74720-11	JA74720-9	JA74720-13	JA74720-5	JA74168-25	JA74168-27	JA74168-29	JA74168-31	JA74168-33
Date Sampled:					4/29/2011	4/29/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Oil & Grease																	
Oil and Grease	mg/kg	NS	NS	NS	909	637	850	76 U	346 B	87 U	82 U	3560	1170	5660	538	842	216 B
NJDEP EPH																	
C10-C12 Aromatics	mg/kg	NS	NS	NS	60.9	0.18 U	0.17 U	0.18 U	0.17 U	0.19 U	0.61 U	0.18 U	0.17 U	0.18 U	0.16 U	0.18 U	0.2 U
C12-C16 Aromatics	mg/kg	NS	NS	NS	65.6	0.37 U	0.37 U	0.38 U	0.36 U	0.41 U	1.3 U	0.37 U	0.36 U	0.37 U	0.33 U	12.6	0.43 U
C16-C21 Aromatics	mg/kg	NS	NS	NS	47.4	16	0.65 U	0.67 U	0.64 U	0.72 U	2.3 U	0.65 U	22.6	43.3	82.3	104	27.2
C21-C36 Aromatics	mg/kg	NS	NS	NS	233	123	39	0.99 U	0.95 U	1.1 U	3.4 U	39.1	62.3	132	69.2	183	75.6
Total Aromatics	mg/kg	NS	NS	NS	406	139	39	0.18 U	0.17 U	0.19 U	0.61 U	39.1	84.9	175	152	300	103
C9-C12 Aliphatics	mg/kg	NS	NS	NS	80.1	0.13 U	0.13 U	0.13 U	0.13 U	0.14 U	0.45 U	0.13 U	0.13 U	0.13 U	0.12 U	7.59	0.15 U
C12-C16 Aliphatics	mg/kg	NS	NS	NS	45.2	0.21 U	10.6	0.21 U	0.2 U	0.23 U	0.72 U	7.87	0.2 U	0.21 U	48.7	64.1	13.5
C16-C21 Aliphatics	mg/kg	NS	NS	NS	21.3	0.28 U	0.27 U	0.28 U	0.27 U	0.3 U	0.96 U	0.27 U	0.27 U	0.28 U	73.1	105	33.5
C21-C40 Aliphatics	mg/kg	NS	NS	NS	125	72.5	51.2	0.56 U	0.54 U	0.61 U	1.9 U	36.7	38.4	118	70.9	323	109
Total Aliphatics	mg/kg	NS	NS	NS	272	72.5	61.9	0.13 U	0.13 U	0.14 U	0.45 U	44.5	38.4	118	193	499	156
Total EPH	mg/kg	NS	NS	NS	678	211	101	5.3 U	5.1 U	5.8 U	18 U	83.6	123	293	344	799	259

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-5: Oil & Grease and EPH Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-02	SB-02	SB-02	SB-02	SB-02	SB-03	SB-03	SB-03	SB-03	SB-03	SB-03	SB-04	SB-04
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	4.0 - 6.0	11.0 - 11.5	12.0 - 14.0	14.0 - 16.0	19.5 - 20.0	5.5 - 6.0	11.5 - 12.0	12.0 - 14.0	16.0 - 18.0	16.0 - 18.0	18.0 - 19.3	5.5 - 6.0	7.5 - 8.0
Client Sample ID:					SB-02.04.0-06.0	SB-02.11.0-11.5	SB-02.12.0-14.0	SB-02.14.0-16.0	SB-02.19.5-20.0	SB-03.05.5-06.0	SB-03.11.5-12.0	SB-03.12.0-14.0	SB-03.16.0-18.0	DUP-02	SB-03.18.0-19.3	SB-04.05.5-06.0	SB-04.07.5-08.0
Lab Sample ID:					JA74168-15	JA74168-19	JA74168-17	JA74168-21	JA74168-23	JA74168-3	JA74168-5	JA74168-7	JA74168-9	JA74168-11	JA74168-13	JA75102-15	JA75102-17
Date Sampled:					4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Oil & Grease																	
Oil and Grease	mg/kg	NS	NS	NS	9730	1260	272 B	172 B	969	82 U	188 B	87 U	133 B	84 U	83 U	1240	571 B
NJDEP EPH																	
C10-C12 Aromatics	mg/kg	NS	NS	NS	0.16 U	0.18 U	0.19 U	0.18 U	2 U	0.18 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.19 U
C12-C16 Aromatics	mg/kg	NS	NS	NS	0.33 U	0.38 U	0.39 U	0.39 U	4.3 U	0.37 U	0.38 U	0.39 U	0.38 U	0.38 U	0.38 U	0.37 U	0.4 U
C16-C21 Aromatics	mg/kg	NS	NS	NS	16.3	53.8	35	27.2	508	0.66 U	0.68 U	0.7 U	0.67 U	0.67 U	0.68 U	0.66 U	25.3
C21-C36 Aromatics	mg/kg	NS	NS	NS	107	93.6	69.5	80.2	450	0.98 U	1 U	1 U	1 U	1 U	1 U	41.3	105
Total Aromatics	mg/kg	NS	NS	NS	123	147	105	107	958	0.18 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	41.3	130
C9-C12 Aliphatics	mg/kg	NS	NS	NS	0.12 U	0.13 U	0.14 U	0.14 U	1.5 U	0.13 U	0.13 U	0.14 U	0.13 U	0.13 U	0.13 U	0.13 U	0.14 U
C12-C16 Aliphatics	mg/kg	NS	NS	NS	0.19 U	0.21 U	0.22 U	0.22 U	2.4 U	0.21 U	0.21 U	0.22 U	0.21 U	0.21 U	0.21 U	0.21 U	0.22 U
C16-C21 Aliphatics	mg/kg	NS	NS	NS	0.25 U	0.28 U	0.29 U	25	3.2 U	0.27 U	0.28 U	0.29 U	0.28 U	0.28 U	0.28 U	0.27 U	0.29 U
C21-C40 Aliphatics	mg/kg	NS	NS	NS	140	58.9	68	241	132	0.55 U	0.58 U	0.59 U	0.57 U	0.57 U	0.57 U	0.55 U	0.59 U
Total Aliphatics	mg/kg	NS	NS	NS	140	58.9	68	266	132	0.13 U	0.13 U	0.14 U	0.13 U	0.13 U	0.13 U	0.13 U	0.14 U
Total EPH	mg/kg	NS	NS	NS	263	206	172	374	1090	5.2 U	5.4 U	5.6 U	5.4 U	5.4 U	5.4 U	41.3	130

Footnotes:
ft bgs - feet below ground surface
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
J - estimated result B - analyte found in method blank
NS- No standard
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-6: Metals Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		**PROJECT SCREENING LEVELS**			**AC-01**	**AC-01**	**AC-01**	**AC-01**	**AC-02**	**AC-02**	**AC-02**	**AC-02**	**AC-02**	**AC-03**	**AC-03**	**AC-03**
Sample Depth Interval (ft bgs)					**7.5 - 8.0**	**14.0 - 14.5**	**18.0 - 20.0**	**18.0 - 20.0**	**6.0 - 8.0**	**8.5 - 9.0**	**12.0 - 12.5**	**15.0 - 15.5**	**17.5 - 18.0**	**5.5 - 6.0**	**5.5 - 6.0**	**6.0 - 8.0**
Client Sample ID:		**NJ Non-Residential Direct Contact Soil Remediation Standard**	**NJ Residential Direct Contact Soil Remediation Standard**	**NJ Default Impact to Groundwater Soil Screening Level**	**AC-01.07.5-08.0**	**AC-01.14.0-14.5**	**AC-01.18.0-20.0**	**DUP-04**	**AC-02. 06.0-08.0**	**AC-02. 08.5-09.0**	**AC-02. 12.0-12.5**	**AC-02. 15.0-15.5**	**AC-02. 17.5-18.0**	**AC-03.05.5-06.0**	**DUP-06**	**AC-03.06.0-0.80**
Lab Sample ID:					**JA74273-4**	**JA74273-6**	**JA74273-8**	**JA74273-10**	**JA74821-3**	**JA74821-5**	**JA74821-7**	**JA74821-9**	**JA74821-11**	**JA74600-3**	**JA74600-5**	**JA74600-7**
Date Sampled:					**4/27/2011**	**4/27/2011**	**4/27/2011**	**4/27/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**5/3/2011**	**4/29/2011**	**4/29/2011**	**4/29/2011**
Matrix:					**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**	**Soil**
Metals																
Aluminum	mg/kg	NA	78000	*	5340	11300	10000	9370	12300	12200	8930	7170	5400	6880	7300	3500
Antimony	mg/kg	450	31	6	2.9	0.61 B	0.56 B	0.81 B	0.56 B	0.82 B	1.0 B	0.54 B	0.45 B	0.67 B	0.61 B	0.43 B
Arsenic	mg/kg	19	19	19	5.2	6.1	5	5	5.5	7.6	7.8	4.5	5.4	4.8	5.4	2.4
Barium	mg/kg	59000	16000	1300	95.3	240	154	167	158	97.8	170	45.4	54.2	72.7	67.2	38.1
Beryllium	mg/kg	140	16	0.5	0.28	0.22 B	0.33	0.43 B	0.51	0.54	0.81	0.3	0.35	0.48	0.5	0.26
Cadmium	mg/kg	78	78	1	**2.4**	**1.1**	0.76	0.42 B	0.54 B	0.56 B	0.95	0.27 B	0.35 B	0.7	0.67	0.19 B
Calcium	mg/kg	NS	NS	NS	9210	23000	11600	17100	4350	5770	11100	3140	6340	12100	16000	10200
Chromium	mg/kg	NS	NS	NS	17	58.7	37.1	29.3	25.6	29.6	260	191	438	18.5	21.5	13.5
Cobalt	mg/kg	590	1600	59	5.0 B	11.4	10.9	7.2	12.9	10.9	7.7	4.1 B	4.8 B	6	7.2	2.7 B
Copper	mg/kg	45000	3100	7300	113	181	330	72.5	29.5	45.9	100	40.9	107	46.7	50.5	24
Iron	mg/kg	NS	NS	NS	17300	26200	24300	19300	18500	25000	33300	12700	16000	17700	18800	9080
Lead	mg/kg	800	400	59	**523**	**1200**	**817**	245	204	210	254	160	106	139	144	69.2
Magnesium	mg/kg	NS	NS	NS	2540	11500	6530	7930	2260	6790	4430	1620	3260	2980	3760	1590
Manganese	mg/kg	5900	11000	*	262	347	345	277	163	535	1400	147	152	239	233	131
Mercury	mg/kg	65	23	0.1	1.1	0.67	0.9	0.64	0.48	0.16	0.38	0.29	0.25	13.2	0.19	0.16
Nickel	mg/kg	23000	1600	31	13.6	23.7	18.1	13.5	12.8	25	20.6	8.9	10.6	18.7	19.1	6.3
Potassium	mg/kg	NS	NS	NS	672 B	4310	2750	3350	1520	1070 B	2110	766 B	913 B	881 B	946 B	661 B
Selenium	mg/kg	5700	390	7	0.31 U	0.33 U	0.33 U	0.30 U	0.32 U	0.31 U	0.34 U	0.63 B	0.52 B	0.31 U	0.30 U	0.26 U
Silver	mg/kg	5700	390	*	0.50 B	0.085 U	0.58 B	0.27 B	0.62	0.75	1.7	0.72	0.75	0.16 B	0.36 B	0.23 B
Sodium	mg/kg	NS	NS	NS	199 B	421 B	345 B	349 B	265 B	176 B	729 B	142 B	131 B	110 B	103 B	70.7 B
Thallium	mg/kg	79	5	3	0.28 B	0.88 B	0.67 B	0.68 B	0.25 U	0.25 U	1.3 U	0.40 B	0.41 B	0.24 U	0.24 U	0.20 U
Tin	mg/kg	NS	NS	NS	39.2	14.6	13.7	13.7	12.3	17.7	20.5	21	14.7	15.9	11.1	4.5 B
Vanadium	mg/kg	1100	78	NA	14.2	38.7	31.3	31.1	20.5	24.4	17.4	13	11.8	18.7	30.6	8.3
Zinc	mg/kg	110000	23000	*	447	439	378	214	220	248	252	102	134	180	330	81.9

Footnotes:
ft bgs - feet below ground surface
mg/kg - Milligram per Kilogram
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
B - Indicates a result >= MDL but < RL
NS- No standard
* - IGW pathway no longer needs to be addressed for aluminum, manganese, silver, and zinc in accordance with NJDEP's FAQ guidance document dated January 2011
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-6: Metals Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-03	AC-03	AC-04	AC-04	AC-04	AC-04	AC-04	SB-01	SB-01	SB-01	SB-01	SB-02
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	9.0 - 9.5	10.0 - 11.0	2.5 - 3.0	2.5 - 3.0	5.5 - 6.0	7.5 - 8.0	9.0 - 9.5	5.0 - 5.5	11.5 - 12.0	14.0 - 16.0	19.2 - 19.7	11.0 - 11.5
Client Sample ID:					AC-03.09.0-09.5	AC-03.10.0-11.0	AC-04.02.5-03.0	DUP-08	AC-04.05.5-06.0	AC-04.07.5-08.0	AC-04.09.0-09.5	SB-01.05.0-05.5	SB-01.11.5-12.0	SB-01.14.0-16.0	SB-01.19.2-19.7	SB-02.11.0-11.5
Lab Sample ID:					JA74600-9	JA74600-11	JA74720-3	JA74720-5	JA74720-7	JA74720-11	JA74720-9	JA74168-25	JA74168-27	JA74168-31	JA74168-33	JA74168-19
Date Sampled:					4/29/2011	4/29/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals																
Aluminum	mg/kg	NA	78000	*	3950	9090	13600	16300	8160	8160	10200	11900	6910	7980	17000	9040
Antimony	mg/kg	450	31	6	3	1.1 B	0.31 B	0.14 U	0.14 U	0.17 B	0.22 B	0.67 B	1.1 B	0.47 B	**89.3**	2.3
Arsenic	mg/kg	19	19	19	3.7	6.4	5.4	6.8	3.7	4.5	4.3	5.7	4.8	3	5.6	6.7
Barium	mg/kg	59000	16000	1300	65.2	167	65.3	52.6	55.1	63.3	84.3	108	97.6	136	131	68.4
Beryllium	mg/kg	140	16	0.5	0.39	0.7	0.49	0.44	0.5	0.43	0.63	0.44	0.36	0.77	1.3	0.33
Cadmium	mg/kg	78	78	1	0.58	0.89	0.17 B	0.11 B	0.058 B	0.097 B	0.11 B	0.85	1.2	0.75	1.6	0.62
Calcium	mg/kg	NS	NS	NS	4960	8510	11800	7200	2300	9620	2570	15200	30000	37800	5300	3800
Chromium	mg/kg	NS	NS	NS	15	28	19	16.2	18.1	17.4	33	22.3	18.2	15.6	63.5	15.6
Cobalt	mg/kg	590	1600	59	4.2 B	8.7	5.0 B	6	5.2 B	4.6 B	6.5	6.7	6.4	3.1 B	14.5	6.3
Copper	mg/kg	45000	3100	7300	43.2	71.3	18.8	19.3	18.7	19	27.5	125	354	25.5	51.8	1050
Iron	mg/kg	NS	NS	NS	15400	23600	19200	18600	18300	15900	20000	18100	16000	12200	33700	17600
Lead	mg/kg	800	400	59	159	216	56.7	55.9	18	54.8	60.7	**401**	324	**981**	**697**	296
Magnesium	mg/kg	NS	NS	NS	2500	4970	2240	4010	3160	6390	3950	4040	7700	9970	15300	2450
Manganese	mg/kg	5900	11000	*	147	322	214	235	312	308	478	353	361	807	956	186
Mercury	mg/kg	65	23	0.1	0.24	0.38	0.32	0.41	0.07	0.55	0.54	0.62	0.34	0.24	0.059	0.61
Nickel	mg/kg	23000	1600	31	18	22.4	11.7	12.2	11.8	10.3	14.7	17.3	15.1	8	21.4	15.5
Potassium	mg/kg	NS	NS	NS	918 B	2760	932 B	835 B	1330	1560	2340	842 B	1130	807 B	3140	768 B
Selenium	mg/kg	5700	390	7	0.29 U	0.47 B	0.45 B	0.30 U	0.31 U	0.50 B	0.49 B	0.28 U	0.30 U	0.31 U	0.35 U	0.31 U
Silver	mg/kg	5700	390	*	0.58	0.21 B	0.62	0.67	0.84	1.4	1.5	0.44 B	0.30 B	0.17 B	0.21 B	0.92
Sodium	mg/kg	NS	NS	NS	93.9 B	172 B	212 B	184 B	176 B	65.3 B	239 B	223 B	300 B	418 B	607 B	260 B
Thallium	mg/kg	79	5	3	0.23 U	0.24 U	0.23 U	0.23 U	0.33 B	0.44 B	0.55 B	0.44 B	0.33 B	0.52 B	0.53 B	0.24 U
Tin	mg/kg	NS	NS	NS	30.4	14.7	5.8	5.2 B	4.6 B	6.7	8.2	50.3	104	13	22.9	7.9
Vanadium	mg/kg	1100	78	NA	12.8	26.3	22.2	23.3	16.9	14.3	24.5	26.3	21.5	14.8	33.2	23.5
Zinc	mg/kg	110000	23000	*	225	287	64	64.4	35.6	53	68.3	315	323	123	411	655

Footnotes:
ft bgs - feet below ground surface
mg/kg - Milligram per Kilogram
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
B - Indicates a result >= MDL but < RL
NS- No standard
* - IGW pathway no longer needs to be addressed for aluminum, manganese, silver, and zinc in accordance with NJDEP's FAQ guidance document dated January 2011
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-6: Metals Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-02	SB-02	SB-02	SB-03	SB-03	SB-03	SB-03	SB-03	SB-03	SB-04	SB-04	SB-04
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	12.0 - 14.0	14.0 - 16.0	19.5 - 20.0	5.5 - 6.0	11.5 - 12.0	12.0 - 14.0	16.0 - 18.0	16.0 - 18.0	18.0 - 19.3	5.5 - 6.0	7.5 - 8.0	8.5 - 9.0
Client Sample ID:					SB-02.12.0-14.0	SB-02.14.0-16.0	SB-02.19.5-20.0	SB-03.05.5-06.0	SB-03.11.5-12.0	SB-03.12.0-14.0	SB-03.16.0-18.0	DUP-02	SB-03.18.0-19.3	SB-04.05.5-06.0	SB-04.07.5-08.0	SB-04.08.5-09.0
Lab Sample ID:					JA74168-17	JA74168-21	JA74168-23	JA74168-3	JA74168-5	JA74168-7	JA74168-9	JA74168-11	JA74168-13	JA75102-15	JA75102-17	JA75102-19
Date Sampled:					4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	5/5/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals																
Aluminum	mg/kg	NA	78000	*	7610	7050	7610	8510	19100	20400	25900	25100	19300	9000	8320	10300
Antimony	mg/kg	450	31	6	2.4	12.1	9.9	0.14 U	0.15 U	0.15 U	0.14 U	0.15 U	0.14 U	0.30 B	0.30 B	0.34 B
Arsenic	mg/kg	19	19	19	5.1	11.2	12.9	4	3.2	3.5	2.2	2.8	2.5	10.6	11.3	6.6
Barium	mg/kg	59000	16000	1300	241	1450	277	49.7	150	208	234	241	175	74	135	99.6
Beryllium	mg/kg	140	16	0.5	0.31	0.49	0.83	0.39	1.4	1.4	0.73	0.84	0.63	0.48	0.51	0.51
Cadmium	mg/kg	78	78	1	1.9	4.3	4.4	0.044 B	0.14 B	0.13 B	0.037 U	0.039 U	0.039 U	0.76	1.2	0.9
Calcium	mg/kg	NS	NS	NS	30500	6430	10800	21300	17900	14400	14300	13400	10800	3700	11300	7150
Chromium	mg/kg	NS	NS	NS	35.1	91.9	74.6	9.8	22.4	29.7	52.5	52.3	36.6	23.8	23.3	18.2
Cobalt	mg/kg	590	1600	59	5.7 B	9.8	10.8	4.5 B	15.5	13.8	16.2	21.1	14	7.8	8.8	7.2
Copper	mg/kg	45000	3100	7300	120	767	613	10.7	16.7	21.1	12.7	13.9	11.4	54.8	79.6	60.9
Iron	mg/kg	NS	NS	NS	17100	36200	58900	12500	33100	35300	43100	43300	33700	21300	19700	20000
Lead	mg/kg	800	400	59	**791**	**5200**	**6860**	**516**	33.2	60.8	5.4	11.9	16	153	313	277
Magnesium	mg/kg	NS	NS	NS	6200	2570	3470	3930	16600	16500	22900	22200	15600	3220	3970	4340
Manganese	mg/kg	5900	11000	*	460	671	741	278	682	688	740	800	564	308	309	203
Mercury	mg/kg	65	23	0.1	0.82	2.9	2.8	0.057	0.1	0.09	0.016 U	0.015 U	0.015 U	0.23	0.56	0.48
Nickel	mg/kg	23000	1600	31	17	71.9	53.4	10	12.7	15.1	17.6	20.7	16.1	14.5	15.7	16.5
Potassium	mg/kg	NS	NS	NS	1250	1200	2040	840 B	10900	11600	17800	17200	7820	1240	1600	1700
Selenium	mg/kg	5700	390	7	0.32 U	0.36 B	0.53 U	0.29 U	0.31 U	0.31 U	0.29 U	0.31 U	0.31 U	0.29 U	0.32 U	0.32 U
Silver	mg/kg	5700	390	*	0.57 B	0.79	0.52 B	0.31 B	1.8 B	1.9 B	1.6 B	2.2 B	1.9 B	0.096 B	0.26 B	0.17 B
Sodium	mg/kg	NS	NS	NS	262 B	1730	2610	397 B	286 B	258 B	308 B	351 B	440 B	67.7 B	127 B	159 B
Thallium	mg/kg	79	5	3	0.95 B	3.2 B	0.42 U	0.23 U	0.25 U	0.25 U	4.4 B	**5.3 B**	0.24 U	0.22 U	0.25 U	0.25 U
Tin	mg/kg	NS	NS	NS	131	39.8	567	3.3 B	4.2 B	5.0 B	3.3 B	3.6 B	3.4 B	11.6	48.2	25.8
Vanadium	mg/kg	1100	78	NA	16.4	30.8	20.7	11.7	43.1	45.1	54.3	55.1	42.2	20.7	20.6	22.5
Zinc	mg/kg	110000	23000	*	670	3810	3720	53.2	89.9	115	102	106	85.2	201	308	222

Footnotes:
ft bgs - feet below ground surface
mg/kg - Milligram per Kilogram
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
B - Indicates a result >= MDL but < RL
NS- No standard
* - IGW pathway no longer needs to be addressed for aluminum, manganese, silver, and zinc in accordance with NJDEP's FAQ guidance document dated January 2011
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-6: Metals Soil Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-04	SB-04	SB-05	SB-05	SB-05	SB-05	SB-05	SB-05
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	13.5 - 14.0	17.3 - 17.8	5.0 - 5.5	7.5 - 8.0	7.5 - 8.0	8.5 - 9.0	12.5 - 13.0	14.7 - 15.2
Client Sample ID:					SB-04.13.5-14.0	SB-04.17.3-17.8	SB-05.05.0-05.5	SB-05.07.5-08.0	DUP-10	SB-05.08.5-09.0	SB-05.12.5-13.0	SB-05.14.7-15.2
Lab Sample ID:					JA75102-21	JA75102-23	JA75102-3	JA75102-5	JA75102-7	JA75102-9	JA75102-11	JA75102-13
Date Sampled:					5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Metals												
Aluminum	mg/kg	NA	78000	*	5490	18300	9930	9220	4200	6770	4640	4280
Antimony	mg/kg	450	31	6	2.3 B	0.14 U	0.14 U	0.14 U	0.14 U	0.15 U	0.19 B	0.15 U
Arsenic	mg/kg	19	19	19	5	2.8	10.8	7.7	3.4	4.9	2.6	8.5
Barium	mg/kg	59000	16000	1300	70.3	148	105	145	115	107	54.8	42.9
Beryllium	mg/kg	140	16	0.5	0.36	1.1	0.73	0.54	0.3	0.45	0.47	0.31
Cadmium	mg/kg	78	78	1	1.7	0.59	1.1	1.1	0.84	0.98	0.38 B	0.43 B
Calcium	mg/kg	NS	NS	NS	2650	7520	9330	7480	3260	6160	1810	2250
Chromium	mg/kg	NS	NS	NS	14.9	13.8	19.3	23.2	18.3	29.4	17.1	10.2
Cobalt	mg/kg	590	1600	59	5.7 B	10.2	11.4	9.3	5.4 B	5.6 B	4.3 B	4.8 B
Copper	mg/kg	45000	3100	7300	93.4	8.7	34.1	50.6	49	49.4	42	38.7
Iron	mg/kg	NS	NS	NS	16000	31300	27600	26400	16400	15000	15000	13400
Lead	mg/kg	800	400	59	207	43	141	170	229	145	208	282
Magnesium	mg/kg	NS	NS	NS	2270	10800	5430	5200	1680	3260	1970	1980
Manganese	mg/kg	5900	11000	*	115	415	438	352	116	179	163	132
Mercury	mg/kg	65	23	0.1	0.17	0.039	0.36	0.24	0.27	0.16	0.68	0.63
Nickel	mg/kg	23000	1600	31	12.9	10.3	15.3	18.4	11.8	12.5	8.2	8
Potassium	mg/kg	NS	NS	NS	906 B	11600	2340	1940	880 B	1390	385 B	625 B
Selenium	mg/kg	5700	390	7	0.34 U	0.30 U	0.30 U	0.30 U	0.30 U	0.32 U	0.31 U	0.32 U
Silver	mg/kg	5700	390	*	0.15 B	0.078 B	0.25 B	0.17 B	0.15 B	0.16 B	0.079 U	0.081 U
Sodium	mg/kg	NS	NS	NS	146 B	156 B	93.8 B	198 B	112 B	90.3 B	193 B	140 B
Thallium	mg/kg	79	5	3	0.29 B	0.24 U	0.24 U	0.23 U	0.28 B	0.25 U	0.24 U	0.25 U
Tin	mg/kg	NS	NS	NS	25.3	4.5 B	10	16.6	24.2	26.5	20.1	36.8
Vanadium	mg/kg	1100	78	NA	14	28.8	34.1	21.7	9.8	15.6	14.2	8.5
Zinc	mg/kg	110000	23000	*	270	116	181	285	1500	179	76.5	104

Footnotes:
ft bgs - feet below ground surface
mg/kg - Milligram per Kilogram
U - result < listed method detection limit
Non-detected results are reported to the method detection limit
B - Indicates a result >= MDL but < RL
NS- No standard
* - IGW pathway no longer needs to be addressed for aluminum, manganese, silver, and zinc in accordance with NJDEP's FAQ guidance document dated January 2011
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-7: Summary of Exceedances for Soil Analytical Results
USACE Assunpink Creek Restoration
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-01	AC-01	AC-01	AC-01	AC-02	AC-02	AC-02	AC-02	AC-02	AC-02	AC-03	AC-03	AC-03	AC-03
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	7.5 - 8.0	14.0 - 14.5	18.0 - 20.0	18.0 - 20.0	6.0 - 8.0	8.5 - 9.0	12.0 - 12.5	15.0 - 15.5	17.5 - 18.0	17.5 - 18.0	5.5 - 6.0	5.5 - 6.0	6.0 - 8.0	9.0
Client Sample ID:					AC-01.07.5-08.0	AC-01.14.0-14.5	AC-01.18.0-20.0	DUP-04	AC-02. 06.0-08.0	AC-02. 08.5-09.0	AC-02. 12.0-12.5	AC-02. 15.0-15.5	AC-02. 17.5-18.0	DUP-10	AC-03.05.5-06.0	DUP-06	AC-03.06.0-08.0	AC-03.09.0-09.0
Lab Sample ID:					JA74273-4	JA74273-6	JA74273-8	JA74273-10	JA74821-3	JA74821-5	JA74821-7	JA74821-9	JA74821-11	JA75102-7	JA74600-3	JA74600-5	JA74600-7	JA74600-8
Date Sampled:					4/27/2011	4/27/2011	4/27/2011	4/27/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/3/2011	5/5/2011	4/29/2011	4/29/2011	4/29/2011	4/29/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)																		
Benzene	mg/kg	5	2	0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0942
Semi-Volatile Organic Compounds (SVOCs)																		
Benzo(a)anthracene	mg/kg	2	0.6	0.5	**1.24**	**0.875**	--	--	**3.34**	**4.47**	--	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg	0.2	0.2	0.2	**1.1**	**0.775**	**0.315**	--	**2.91**	**3.05**	**0.403**	--	**0.263**	**0.424**	**0.264**	--	--	--
Benzo(b)fluoranthene	mg/kg	2	0.6	2	**1.04**	**0.705**	--	--	**3.07**	**3.1**	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	0.5	**0.241**	--	--	--	**0.766**	**0.844**	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	2	0.6	5	**0.631**	--	--	--	**1.78**	**1.82**	--	--	--	--	--	--	--	--
Naphthalene	mg/kg	17	6	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides																		
Dieldrin	mg/kg	0.2	0.04	0.003	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1254	mg/kg	1	0.2	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	mg/kg	1	0.2	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Antimony	mg/kg	450	31	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	mg/kg	59000	16000	1300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	mg/kg	140	16	0.5	--	--	--	--	0.51	0.54	0.81	--	--	--	--	--	--	--
Cadmium	mg/kg	78	78	1	**2.4**	**1.1**	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/kg	800	400	59	**523**	**1200**	**817**	245	204	210	254	160	106	--	139	144	69.2	--
Manganese	mg/kg	5900	11000	42	262	347	345	277	163	535	1400	147	152	--	239	233	131	--
Mercury	mg/kg	65	23	0.1	1.1	0.67	0.9	0.64	0.48	0.16	0.38	0.29	0.25	--	13.2	0.19	0.16	--
Nickel	mg/kg	23000	1600	31	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	mg/kg	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	mg/kg	79	5	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Footnotes:
ft bgs - feet below ground surface
-- analyte does not exceed PSL for this sample
J - estimated result B - analyte found in method blank NS- No standard
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-7: Summary of Exceedances for Soil Analytical Results
USACE Assunpink Creek Restoration
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			AC-03	AC-03	AC-03	AC-03	AC-03	AC-04	AC-04	AC-04	AC-04	AC-04	SB-01	SB-01	SB-01	SB-01
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	9.0 - 9.5	10.5	10.0 - 11.0	10.0 - 11.0	11.2	2.5 - 3.0	2.5 - 3.0	5.5 - 6.0	7.5 - 8.0	9.0 - 9.5	5.0 - 5.5	11.5 - 12.0	12.0 - 14.0	14.0 - 16.0
Client Sample ID:					AC-03.09.0-09.5	AC-03.10.5-10.5	AC-03.10.0-11.0	DUP-06	AC-03.11.2-11.2	AC-04.02.5-03.0	DUP-08	AC-04.05.5-06.0	AC-04.07.5-08.0	AC-04.09.0-09.5	SB-01.05.0-05.5	SB-01.11.5-12.0	SB-01.12.0-14.0	SB-01.14.0-16.0
Lab Sample ID:					JA74600-9	JA74600-10	JA74600-11	JA74600-5	JA74600-12	JA74720-3	JA74720-5	JA74720-7	JA74720-11	JA74720-9	JA74168-25	JA74168-27	JA74168-29	JA74168-31
Date Sampled:					4/29/2011	4/29/2011	4/29/2011	4/29/2011	4/29/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	5/2/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)																		
Benzene	mg/kg	5	2	0.005	--	0.0445 J	--	--	0.0457 J	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)																		
Benzo(a)anthracene	mg/kg	2	0.6	0.5	--	--	--	--	--	--	--	--	--	--	**0.973**	**2.44**	**0.861**	**4.01**
Benzo(a)pyrene	mg/kg	0.2	0.2	0.2	**0.269**	--	**0.39**	**0.386**	--	--	--	--	--	--	**0.883**	**1.83**	**0.723**	**3.04**
Benzo(b)fluoranthene	mg/kg	2	0.6	2	--	--	--	--	--	--	--	--	--	--	**0.786**	**1.88**	**0.855**	**2.61**
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	0.5	--	--	--	--	--	--	--	--	--	--	**0.245**	**0.529**	--	**0.702**
Indeno(1,2,3-cd)pyrene	mg/kg	2	0.6	5	--	--	--	--	--	--	--	--	--	--	--	**0.999**	--	**1.51**
Naphthalene	mg/kg	17	6	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides																		
Dieldrin	mg/kg	0.2	0.04	0.003	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1254	mg/kg	1	0.2	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	mg/kg	1	0.2	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Antimony	mg/kg	450	31	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	mg/kg	59000	16000	1300	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	mg/kg	140	16	0.5	--	--	0.7	--	--	--	--	--	--	0.63	--	--	--	0.77
Cadmium	mg/kg	78	78	1	--	--	--	--	--	--	--	--	--	--	--	1.2	--	--
Lead	mg/kg	800	400	59	159	--	216	--	--	--	--	--	--	60.7	**401**	324	--	**981**
Manganese	mg/kg	5900	11000	42	147	--	322	--	--	214	235	312	308	478	353	361	--	807
Mercury	mg/kg	65	23	0.1	0.24	--	0.38	--	--	0.32	0.41	--	0.55	0.54	0.62	0.34	--	0.24
Nickel	mg/kg	23000	1600	31	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	mg/kg	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	mg/kg	79	5	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Footnotes:
ft bgs - feet below ground surface
-- analyte does not exceed PSL for this sample
J - estimated result B - analyte found in method blank NS- No standard
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-7: Summary of Exceedances for Soil Analytical Results
USACE Assunpink Creek Restoration
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-01	SB-02	SB-02	SB-02	SB-02	SB-02	SB-03	SB-03	SB-03	SB-03	SB-03	SB-03	SB-04	SB-04
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	19.2 - 19.7	4.0 - 6.0	11.0 - 11.5	12.0 - 14.0	14.0 - 16.0	19.5 - 20.0	5.5 - 6.0	11.5 - 12.0	12.0 - 14.0	16.0 - 18.0	16.0 - 18.0	18.0 - 19.3	5.5 - 6.0	7.5 - 8.0
Client Sample ID:					SB-01.19.2-19.7	SB-02.04.0-06.0	SB-02.11.0-11.5	SB-02.12.0-14.0	SB-02.14.0-16.0	SB-02.19.5-20.0	SB-03.05.5-06.0	SB-03.11.5-12.0	SB-03.12.0-14.0	SB-03.16.0-18.0	DUP-02	SB-03.18.0-19.3	SB-04.05.5-06.0	SB-04.07.5-08.0
Lab Sample ID:					JA74168-33	JA74168-15	JA74168-19	JA74168-17	JA74168-21	JA74168-23	JA74168-3	JA74168-5	JA74168-7	JA74168-9	JA74168-11	JA74168-13	JA75102-15	JA75102-17
Date Sampled:					4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	4/26/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)																		
Benzene	mg/kg	5	2	0.005	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)																		
Benzo(a)anthracene	mg/kg	2	0.6	0.5	--	**0.865**	**12.5**	**1.82**	**2.64**	**16**	--	--	--	--	--	--	**0.633**	**2.83**
Benzo(a)pyrene	mg/kg	0.2	0.2	0.2	--	**0.756**	**11.1**	**1.63**	**2**	**12.5**	--	--	--	--	--	--	**0.609**	**2.33**
Benzo(b)fluoranthene	mg/kg	2	0.6	2	--	**0.661**	**21.4**	**1.5**	**2.44**	**11.1**	--	--	--	--	--	--	--	**2.39**
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	0.5	--	--	**2.37**	**0.449**	**0.465**	**2.58**	--	--	--	--	--	--	--	**0.625**
Indeno(1,2,3-cd)pyrene	mg/kg	2	0.6	5	--	--	**6.31**	**0.922**	**1.07**	**6.26**	--	--	--	--	--	--	--	**1.37**
Naphthalene	mg/kg	17	6	16	--	--	--	--	--	**7.06**	--	--	--	--	--	--	--	--
Pesticides																		
Dieldrin	mg/kg	0.2	0.04	0.003	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)																		
Aroclor 1254	mg/kg	1	0.2	0.2	--	--	--	**1.46**	**0.653**	--	--	--	--	--	--	--	--	--
Aroclor 1260	mg/kg	1	0.2	0.2	--	--	--	--	**0.211**	--	--	--	--	--	--	--	**5.67**	--
Metals																		
Antimony	mg/kg	450	31	6	**89.3**	--	--	--	12.1	9.9	--	--	--	--	--	--	--	--
Barium	mg/kg	59000	16000	1300	--	--	--	--	1450	--	--	--	--	--	--	--	--	--
Beryllium	mg/kg	140	16	0.5	1.3	--	--	--	--	0.83	--	1.4	1.4	0.73	0.84	0.63	--	0.51
Cadmium	mg/kg	78	78	1	1.6	--	--	1.9	4.3	4.4	--	--	--	--	--	--	--	1.2
Lead	mg/kg	800	400	59	**697**	--	296	**791**	**5200**	**6860**	**516**	--	60.8	--	--	--	153	313
Manganese	mg/kg	5900	11000	42	956	--	186	460	671	741	278	682	688	740	800	564	308	309
Mercury	mg/kg	65	23	0.1	--	--	0.61	0.82	2.9	2.8	--	--	--	--	--	--	0.23	0.56
Nickel	mg/kg	23000	1600	31	--	--	--	--	71.9	53.4	--	--	--	--	--	--	--	--
Sodium	mg/kg	NS	NS	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	mg/kg	79	5	3	--	--	--	--	3.2 B	--	--	--	--	4.4 B	**5.3 B**	--	--	--

Footnotes:
ft bgs - feet below ground surface
-- analyte does not exceed PSL for this sample
J - estimated result B - analyte found in method blank NS- No standard
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 2-7: Summary of Exceedances for Soil Analytical Results
USACE Assunpink Creek Restoration
Trenton, New Jersey

Soil Boring ID:		PROJECT SCREENING LEVELS			SB-04	SB-04	SB-04	SB-05	SB-05	SB-05	SB-05	SB-05	SB-05
Sample Depth Interval (ft bgs)		NJ Non-Residential Direct Contact Soil Remediation Standard	NJ Residential Direct Contact Soil Remediation Standard	NJ Default Impact to Groundwater Soil Screening Level	8.5 - 9.0	13.5 - 14.0	17.3 - 17.8	5.0 - 5.5	7.5 - 8.0	7.5 - 8.0	8.5 - 9.0	12.5 - 13.0	14.7 - 15.2
Client Sample ID:					SB-04.08.5-09.0	SB-04.13.5-14.0	SB-04.17.3-17.8	SB-05.05.0-05.5	SB-05.07.5-08.0	DUP-10	SB-05.08.5-09.0	SB-05.12.5-13.0	SB-05.14.7-15.2
Lab Sample ID:					JA75102-19	JA75102-21	JA75102-23	JA75102-3	JA75102-5	JA75102-7	JA75102-9	JA75102-11	JA75102-13
Date Sampled:					5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011	5/5/2011
Matrix:					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Volatile Organic Compounds (VOCs)													
Benzene	mg/kg	5	2	0.005	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)													
Benzo(a)anthracene	mg/kg	2	0.6	0.5	**1.08**	**1.2**	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg	0.2	0.2	0.2	**0.952**	**1.14**	--	**0.204**	**0.297**	**--**	**0.418**	--	--
Benzo(b)fluoranthene	mg/kg	2	0.6	2	**0.918**	**1.15**	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	mg/kg	0.2	0.2	0.5	**0.219**	**0.223**	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg	2	0.6	5	--	**0.615**	--	--	--	--	--	--	--
Naphthalene	mg/kg	17	6	16	--	--	--	--	--	--	--	--	--
Pesticides													
Dieldrin	mg/kg	0.2	0.04	0.003	0.0053	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)													
Aroclor 1254	mg/kg	1	0.2	0.2	--	--	--	--	--	--	--	--	--
Aroclor 1260	mg/kg	1	0.2	0.2	--	--	--	--	--	--	--	--	--
Metals													
Antimony	mg/kg	450	31	6	--	--	--	--	--	--	--	--	--
Barium	mg/kg	59000	16000	1300	--	--	--	--	--	--	--	--	--
Beryllium	mg/kg	140	16	0.5	0.51	--	1.1	0.73	0.54	--	--	--	--
Cadmium	mg/kg	78	78	1	--	1.7	--	1.1	1.1	--	--	--	--
Lead	mg/kg	800	400	59	277	207	--	141	170	229	145	208	282
Manganese	mg/kg	5900	11000	42	203	115	415	438	352	116	179	163	132
Mercury	mg/kg	65	23	0.1	0.48	0.17	--	0.36	0.24	0.27	0.16	0.68	0.63
Nickel	mg/kg	23000	1600	31	--	--	--	--	--	--	--	--	--
Sodium	mg/kg	NS	NS	NS	--	--	--	--	--	--	--	--	--
Thallium	mg/kg	79	5	3	--	--	--	--	--	--	--	--	--

Footnotes:
ft bgs - feet below ground surface
-- analyte does not exceed PSL for this sample
J - estimated result B - analyte found in method blank NS- No standard
mg/kg - Milligram per Kilogram
Value exceeds NJ Non-Residential Direct Contact Soil Remediation Standard
Value exceeds NJ Residential Direct Contact Soil Remediation Standard
Value Exceeds NJ Default Impact to Groundwater Soil Screening Level

Table 3-1: Summary of Groundwater Analytical Methods and QC Samples
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Parameter	Method	Number of Primary Samples	Number of Duplicate Samples	Number of MS/MSD Samples
Volatile Organic Compounds (VOCs) + TICs	8260B [1]	4	1	1
Semi-Volatile Organic Compounds (SVOCs) + TICs	8270C [1]	4	1	1
Organochlorine Pesticides	8081A [1]	4	1	1
Chlorinated Herbicides	8151 [1]	4	1	1
Polychlorinated Biphenyls (PCBs)	8082 [1]	4	1	1
Dioxin	1613B [2]	4	1	1
Oil & Grease	1664A [3] / 9071B [1]	4	1	1
Target Analyte List (TAL) Metals	6010B [1] / 7470A / 7471A[1]	4	1	1
Total Suspended Solids (TSS)	SM20 2540D [4]	4	1	1
Biochemical Oxygen Demand (BOD)	SM20 5210B [4]	4	1	1

Footnotes:

TICs - Tentatively Identified Compounds

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Method References:

1- USEPA. 2004. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 3rd Edition, Update IIIB.* Washington D.C.

2 - USEPA. 1999. *Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGTHEM;Non-polar Material) by Extraction and Gravimetry.*

3 - USEPA. 1999. *Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGTHEM;Non-polar Material) by Extraction and Gravimetry.*

4- AWWA, *APHA, and WEF. 1998. Standard Methods for the Examination of Water and Wastewater,* 20th Edition. Washington, D.C

Table 3-2: VOC Groundwater Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		PROJECT SCREENING LEVELS		AC-01	AC-01	AC-02	AC-03	AC-04
Client Sample ID:		NJDEP Class IIA Aquifer: Higher of PQL or GWQC	Trenton Sewer Utility Local Limits	AC-01	DUP052311	AC-02	AC-03	AC-04
Lab Sample ID:				JA76604-4	JA76604-5	JA76604-8	JA76604-9	JA76604-2
Date Sampled:				5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
Matrix:				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Method:				Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Volatile Organic Compounds (VOCs)								
Acetone	ug/l	6000	NS	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
Benzene	ug/l	1	500	0.26 U	0.26 U	0.26 U	0.57 J	0.26 U
Bromochloromethane	ug/l	NS	NS	0.79 U	0.79 U	0.79 U	0.79 U	0.79 U
Bromodichloromethane	ug/l	1	NS	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Bromoform	ug/l	4	NS	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
Bromomethane	ug/l	10	NS	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
2-Butanone (MEK)	ug/l	300	NS	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Carbon disulfide	ug/l	700	NS	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Carbon tetrachloride	ug/l	1	NS	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U
Chlorobenzene	ug/l	50	NS	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Chloroethane	ug/l	NS	NS	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Chloroform	ug/l	70	NS	0.14 U	0.14 U	0.14 U	0.14 U	7.1
Chloromethane	ug/l	NS	NS	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Cyclohexane	ug/l	NS	NS	0.43 U	0.43 U	0.43 U	3.6 J	0.43 U
1,2-Dibromo-3-chloropropane	ug/l	0.02	NS	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
Dibromochloromethane	ug/l	1	NS	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,2-Dibromoethane	ug/l	0.03	NS	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
1,2-Dichlorobenzene	ug/l	600	NS	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,3-Dichlorobenzene	ug/l	600	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
1,4-Dichlorobenzene	ug/l	75	NS	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Dichlorodifluoromethane	ug/l	1000	NS	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
1,1-Dichloroethane	ug/l	50	NS	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,2-Dichloroethane	ug/l	2	NS	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
1,1-Dichloroethene	ug/l	1	NS	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
cis-1,2-Dichloroethene	ug/l	70	NS	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
trans-1,2-Dichloroethene	ug/l	100	NS	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-Dichloropropane	ug/l	1	NS	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
cis-1,3-Dichloropropene	ug/l	NS	NS	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
trans-1,3-Dichloropropene	ug/l	NS	NS	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,4-Dioxane	ug/l	NS	NS	39 U	39 U	39 U	39 U	39 U
Ethylbenzene	ug/l	700	500	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
CFC 113	ug/l	NS	NS	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U
2-Hexanone	ug/l	NS	NS	1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
Isopropylbenzene	ug/l	700	NS	0.31 U	0.31 U	0.31 U	2.6	0.31 U
Methyl Acetate	ug/l	7000	NS	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Methylcyclohexane	ug/l	NS	NS	0.16 U	0.16 U	0.16 U	19.2	0.16 U
Methyl Tert Butyl Ether	ug/l	70	NS	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4-Methyl-2-pentanone(MIBK)	ug/l	NS	NS	0.74 U	0.74 U	0.74 U	0.74 U	0.74 U
Methylene chloride	ug/l	3	NS	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Styrene	ug/l	100	NS	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U
Tert Butyl Alcohol	ug/l	100	NS	4 U	4 U	4 U	4 U	4 U
1,1,2,2-Tetrachloroethane	ug/l	1	NS	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Tetrachloroethene	ug/l	1	NS	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Toluene	ug/l	600	500	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
1,2,3-Trichlorobenzene	ug/l	NS	NS	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
1,2,4-Trichlorobenzene	ug/l	9	NS	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,1,1-Trichloroethane	ug/l	30	NS	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	ug/l	3	NS	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Trichloroethene	ug/l	1	NS	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Trichlorofluoromethane	ug/l	2000	NS	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
Vinyl chloride	ug/l	1	NS	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
m,p-Xylene	ug/l	NS	NS	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
o-Xylene	ug/l	NS	NS	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Xylene (total)	ug/l	1000	500	0.28 U	0.28 U	0.28 U	0.37 J	0.28 U
VOC Tentatively Identified Compounds (TICs)								
Total TIC, Volatile	ug/l	NS	NS	5.9	11.5	0	202.2	0

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - analyte found in method blank

NS- No standard

ug/l - Microgram per Liter

PQL - Practical Quantitation Limit GWQC - Groundwater Quality Criterion

Value Exceeds NJDEP Class IIA: Higher of PQL or GWQC

Value Exceeds Trenton Sewer Utility Local Limits

Table 3-3: SVOC Groundwater Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		PROJECT SCREENING LEVELS		AC-01	AC-01	AC-02	AC-03	AC-04
Client Sample ID:		NJDEP Class IIA Aquifer: Higher of PQL or GWQC	Trenton Sewer Utility Local Limits	AC-01	DUP052311	AC-02	AC-03	AC-04
Lab Sample ID:				JA76604-4	JA76604-5	JA76604-8	JA76604-9	JA76604-2
Date Sampled:				5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
Matrix:				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Method:				Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Semi-Volatile Organic Compounds (SVOCs)								
Acenaphthene	ug/l	400	NS	0.62	0.731	0.482	0.201	0.014 U
Acenaphthylene	ug/l	NS	NS	0.016 U	0.016 U	0.018 U	0.016 U	0.016 U
Acetophenone	ug/l	700	NS	0.4 U	0.4 U	0.44 U	0.4 U	0.4 U
Anthracene	ug/l	2000	NS	0.153	0.141	0.132	0.141	0.01 U
Atrazine	ug/l	3	NS	0.39 U	0.39 U	0.43 U	0.39 U	0.39 U
Benzaldehyde	ug/l	NS	NS	0.4 U	0.4 U	0.44 U	0.4 U	0.4 U
Benzo(a)anthracene	ug/l	0.1	NS	0.015 U	0.015 U	0.017 U	0.015 U	0.015 U
Benzo(a)pyrene	ug/l	0.1	NS	0.0049 U	0.0049 U	0.0054 U	0.0049 U	0.0049 U
Benzo(b)fluoranthene	ug/l	0.2	NS	0.016 U	0.016 U	0.018 U	0.016 U	0.016 U
Benzo(g,h,i)perylene	ug/l	NS	NS	0.01 U	0.01 U	0.011 U	0.01 U	0.01 U
Benzo(k)fluoranthene	ug/l	0.5	NS	0.013 U	0.013 U	0.014 U	0.013 U	0.013 U
1,1'-Biphenyl	ug/l	400	NS	0.42 U	0.42 U	0.46 U	0.42 U	0.42 U
bis(2-Chloroethoxy)methane	ug/l	NS	NS	0.25 U	0.25 U	0.27 U	0.25 U	0.25 U
bis(2-Chloroethyl)ether	ug/l	7	NS	0.31 U	0.31 U	0.34 U	0.31 U	0.31 U
bis(2-Chloroisopropyl)ether	ug/l	300	NS	0.39 U	0.39 U	0.43 U	0.39 U	0.39 U
bis(2-Ethylhexyl)phthalate	ug/l	3	NS	0.33 U	0.33 U	0.36 U	0.33 U	0.33 U
4-Bromophenyl phenyl ether	ug/l	NS	NS	0.35 U	0.35 U	0.38 U	0.35 U	0.35 U
Butyl benzyl phthalate	ug/l	100	NS	0.25 U	0.25 U	0.28 U	0.25 U	0.25 U
Caprolactam	ug/l	NS	NS	0.2 U	0.2 U	0.21 U	0.2 U	0.2 U
Carbazole	ug/l	NS	NS	0.17 U	0.17 U	0.18 U	0.17 U	0.17 U
4-Chloroaniline	ug/l	30	NS	0.25 U	0.25 U	0.28 U	0.25 U	0.25 U
2-Chloronaphthalene	ug/l	600	NS	0.42 U	0.42 U	0.46 U	0.42 U	0.42 U
2-Chlorophenol	ug/l	40	NS	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
4-Chloro-3-methyl phenol	ug/l	NS	NS	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
4-Chlorophenyl phenyl ether	ug/l	NS	NS	0.35 U	0.35 U	0.39 U	0.35 U	0.35 U
Chrysene	ug/l	5	NS	0.023 U	0.023 U	0.025 U	0.023 U	0.023 U
Dibenzo(a,h)anthracene	ug/l	0.3	NS	0.023 U	0.023 U	0.025 U	0.023 U	0.023 U
Dibenzofuran	ug/l	NS	NS	0.3 U	0.3 U	0.33 U	0.3 U	0.3 U
3,3'-Dichlorobenzidine	ug/l	30	NS	0.3 U	0.3 U	0.32 U	0.3 U	0.3 U
2,4-Dichlorophenol	ug/l	20	NS	1.2 U	1.2 U	1.3 U	1.2 U	1.2 U
Diethyl phthalate	ug/l	6000	NS	0.17 U	0.17 U	0.18 U	0.17 U	0.17 U
Dimethyl phthalate	ug/l	NS	NS	0.23 U	0.23 U	0.25 U	0.23 U	0.23 U
2,4-Dimethylphenol	ug/l	100	NS	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
4,6-Dinitro-o-cresol	ug/l	NS	NS	0.51 U	0.51 U	0.56 U	0.51 U	0.51 U
Di-n-butyl phthalate	ug/l	700	NS	0.19 U	0.19 U	0.21 U	0.19 U	0.19 U
Di-n-octyl phthalate	ug/l	100	NS	0.4 U	0.4 U	0.43 U	0.4 U	0.4 U
2,4-Dinitrophenol	ug/l	40	NS	0.74 U	0.74 U	0.81 U	0.74 U	0.74 U
2,4-Dinitrotoluene	ug/l	NS	NS	0.22 U	0.22 U	0.24 U	0.22 U	0.22 U
2,6-Dinitrotoluene	ug/l	NS	NS	0.33 U	0.33 U	0.36 U	0.33 U	0.33 U
Fluoranthene	ug/l	300	NS	0.29	0.348	0.192	0.352	0.0096 U
Fluorene	ug/l	300	NS	0.679	0.815	0.016 U	0.154	0.015 U
Hexachlorobenzene	ug/l	0.02	NS	0.008 U	0.008 U	0.0088 U	0.008 U	0.008 U
Hexachlorobutadiene	ug/l	1	NS	0.13 U	0.13 U	0.14 U	0.13 U	0.13 U
Hexachlorocyclopentadiene	ug/l	40	NS	0.24 U	0.24 U	0.27 U	0.24 U	0.24 U
Hexachloroethane	ug/l	7	NS	0.21 U	0.21 U	0.23 U	0.21 U	0.21 U
Indeno(1,2,3-cd)pyrene	ug/l	0.2	NS	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U
Isophorone	ug/l	40	NS	0.25 U	0.25 U	0.27 U	0.25 U	0.25 U
2-Methylnaphthalene	ug/l	NS	NS	0.66 U	0.66 U	0.72 U	0.66 U	0.66 U
2-Methylphenol	ug/l	NS	NS	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
3&4-Methylphenol	ug/l	NS	NS	1 U	1 U	1.1 U	1 U	1 U
Naphthalene	ug/l	300	NS	0.016 U	0.016 U	0.018 U	0.016 U	0.016 U
Nitrobenzene	ug/l	6	NS	0.25 U	0.25 U	0.28 U	0.25 U	0.25 U
N-Nitroso-di-n-propylamine	ug/l	10	NS	0.44 U	0.44 U	0.48 U	0.44 U	0.44 U
N-Nitrosodiphenylamine	ug/l	10	NS	0.22 U	0.22 U	0.24 U	0.22 U	0.22 U

Table 3-3: SVOC Groundwater Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**AC-01**	**AC-01**	**AC-02**	**AC-03**	**AC-04**
Client Sample ID:		**NJDEP Class IIA Aquifer: Higher of PQL or GWQC**	**Trenton Sewer Utility Local Limits**	**AC-01**	**DUP052311**	**AC-02**	**AC-03**	**AC-04**
Lab Sample ID:				**JA76604-4**	**JA76604-5**	**JA76604-8**	**JA76604-9**	**JA76604-2**
Date Sampled:				**5/23/2011**	**5/23/2011**	**5/23/2011**	**5/23/2011**	**5/23/2011**
Matrix:				**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Sample Method:				**Low Flow**	**Low Flow**	**Low Flow**	**Low Flow**	**Low Flow**
Semi-Volatile Organic Compounds (SVOCs)								
2-Nitroaniline	ug/l	NS	NS	0.24 U	0.24 U	0.26 U	0.24 U	0.24 U
2-Nitrophenol	ug/l	NS	NS	1.2 U	1.2 U	1.4 U	1.2 U	1.2 U
3-Nitroaniline	ug/l	NS	NS	0.29 U	0.29 U	0.32 U	0.29 U	0.29 U
4-Nitroaniline	ug/l	NS	NS	0.18 U	0.18 U	0.2 U	0.18 U	0.18 U
4-Nitrophenol	ug/l	NS	NS	0.83 U	0.83 U	0.91 U	0.83 U	0.83 U
Pentachlorophenol	ug/l	0.3	NS	0.29 U	0.29 U	0.31 U	0.29 U	0.29 U
Phenanthrene	ug/l	NS	NS	0.395	0.52	0.588	0.536	0.016 U
Phenol	ug/l	2000	2000	0.58 U	0.58 U	0.63 U	0.58 U	0.58 U
Pyrene	ug/l	200	NS	0.245	0.28	0.212	0.289	0.0081 U
Pyridine	ug/l	NS	NS	0.27 U	0.27 U	0.3 U	0.27 U	0.27 U
1,2,4,5-Tetrachlorobenzene	ug/l	NS	NS	0.48 U	0.48 U	0.53 U	0.48 U	0.48 U
2,3,4,6-Tetrachlorophenol	ug/l	200	NS	0.81 U	0.81 U	0.89 U	0.81 U	0.81 U
2,4,5-Trichlorophenol	ug/l	700	NS	1.3 U	1.3 U	1.5 U	1.3 U	1.3 U
2,4,6-Trichlorophenol	ug/l	20	NS	1.2 U	1.2 U	1.3 U	1.2 U	1.2 U
SVOC Tentatively Identified Compounds (TICs)								
Total TIC, Semi-Volatile	ug/l	NS	NS	4	4.1	0	101.2	0

Footnotes:

ug/l - Microgram per Liter

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result NS- No standard

PQL - Practical Quantitation Limit GWQC - Groundwater Quality Criterion

Value Exceeds NJDEP Class IIA: Higher of PQL or GWQC

Value Exceeds Trenton Sewer Utility Local Limits

Table 3-4: Pesticide, Herbicide, and PCB Groundwater Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		PROJECT SCREENING LEVELS		AC-01	AC-01	AC-02	AC-03	AC-04
Client Sample ID:		NJDEP Class IIA Aquifer: Higher of PQL or GWQC	Trenton Sewer Utility Local Limits	AC-01	DUP052311	AC-02	AC-03	AC-04
Lab Sample ID:				JA76604-4	JA76604-5	JA76604-8	JA76604-9	JA76604-2
Date Sampled:				5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
Matrix:				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Method:				Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Pesticides								
Aldrin	ug/l	0.04	NS	0.0095 U	0.0095 U	0.01 U	0.0095 U	0.0095 U
alpha-BHC	ug/l	0.02	NS	0.004 U	0.004 U	0.0043 U	0.004 U	0.004 U
beta-BHC	ug/l	0.04	NS	0.0027 U	0.0027 U	0.0029 U	0.0027 U	0.0027 U
delta-BHC	ug/l	NS	NS	0.0062 U	0.0062 U	0.0067 U	0.0062 U	0.0062 U
gamma-BHC (Lindane)	ug/l	0.03	NS	0.0019 U	0.0019 U	0.002 U	0.0019 U	0.0019 U
alpha-Chlordane	ug/l	NS	NS	0.005 U	0.005 U	0.0054 U	0.005 U	0.005 U
gamma-Chlordane	ug/l	NS	NS	0.0023 U	0.0023 U	0.0025 U	0.0023 U	0.0023 U
Dieldrin	ug/l	0.03	NS	0.0033 U	0.0033 U	0.0036 U	0.0033 U	0.0033 U
4,4'-DDD	ug/l	0.1	NS	0.0034 U	0.0034 U	0.0037 U	0.0034 U	0.0034 U
4,4'-DDE	ug/l	0.1	NS	0.003 U	0.003 U	0.0032 U	0.003 U	0.003 U
4,4'-DDT	ug/l	0.1	NS	0.006 U	0.006 U	0.0065 U	0.006 U	0.006 U
Endrin	ug/l	2	NS	0.0064 U	0.0064 U	0.0069 U	0.0064 U	0.0064 U
Endosulfan sulfate	ug/l	40	NS	0.0064 U	0.0064 U	0.007 U	0.0064 U	0.0064 U
Endrin aldehyde	ug/l	NS	NS	0.0029 U	0.0029 U	0.0031 U	0.0029 U	0.0029 U
Endrin ketone	ug/l	NS	NS	0.0041 U	0.0041 U	0.0044 U	0.0041 U	0.0041 U
Endosulfan-I	ug/l	40	NS	0.003 U	0.003 U	0.0033 U	0.003 U	0.003 U
Endosulfan-II	ug/l	40	NS	0.0028 U	0.0028 U	0.003 U	0.0028 U	0.0028 U
Heptachlor	ug/l	0.05	NS	0.0084 U	0.0084 U	0.0091 U	0.0084 U	0.0084 U
Heptachlor epoxide	ug/l	0.2	NS	0.0038 U	0.0038 U	0.0041 U	0.0038 U	0.0038 U
Methoxychlor	ug/l	40	NS	0.0082 U	0.0082 U	0.0089 U	0.0082 U	0.0082 U
Toxaphene	ug/l	2	NS	0.25 U	0.25 U	0.27 U	0.25 U	0.25 U
Herbicides								
2,4-D	ug/l	70	NS	0.16 U	0.16 U	0.19 U	0.16 U	0.16 U
2,4,5-TP (Silvex)	ug/l	60	NS	0.026 U	0.026 U	0.03 U	0.026 U	0.026 U
2,4,5-T	ug/l	NS	NS	0.02 U	0.02 U	0.023 U	0.02 U	0.02 U
Dalapon	ug/l	200	NS	0.035 U	0.035 U	0.04 U	0.035 U	0.035 U
Dicamba	ug/l	NS	NS	0.042 U	0.042 U	0.047 U	0.042 U	0.042 U
Dichloroprop	ug/l	NS	NS	0.13 U	0.13 U	0.14 U	0.13 U	0.13 U
Dinoseb	ug/l	7	NS	0.071 U	0.071 U	0.081 U	0.071 U	0.071 U
MCPA	ug/l	NS	NS	16 U	16 U	18 U	16 U	16 U
MCPP	ug/l	NS	NS	6.8 U	6.8 U	7.8 U	6.8 U	6.8 U
Pentachlorophenol	ug/l	0.3	NS	0.024 U	0.024 U	0.027 U	0.024 U	0.024 U
2,4-DB	ug/l	NS	NS	0.15 U	0.15 U	0.17 U	0.15 U	0.15 U
Polychlorinated Biphenyls (PCBs)								
Aroclor 1016	ug/l	0.5	NS	0.13 U	0.13 U	0.14 U	0.13 U	0.13 U
Aroclor 1221	ug/l	0.5	NS	0.27 U	0.27 U	0.29 U	0.27 U	0.27 U
Aroclor 1232	ug/l	0.5	NS	0.39 U	0.39 U	0.42 U	0.39 U	0.39 U
Aroclor 1242	ug/l	0.5	NS	0.086 U	0.086 U	0.093 U	0.086 U	0.086 U
Aroclor 1248	ug/l	0.5	NS	0.15 U	0.15 U	0.16 U	0.15 U	0.15 U
Aroclor 1254	ug/l	0.5	NS	0.14 U	0.14 U	0.15 U	0.14 U	0.14 U
Aroclor 1260	ug/l	0.5	NS	0.21 U	0.21 U	0.23 U	0.21 U	0.21 U
Aroclor 1268	ug/l	NS	NS	0.13 U	0.13 U	0.14 U	0.13 U	0.13 U
Aroclor 1262	ug/l	NS	NS	0.06 U	0.06 U	0.065 U	0.06 U	0.06 U

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result NS- No standard

ug/l - Microgram per Liter

PQL - Practical Quantitation Limit GWQC - Groundwater Quality Criterion

Value Exceeds NJDEP Class IIA: Higher of PQL or GWQC

Value Exceeds Trenton Sewer Utility Local Limits

Table 3-5: Dioxin and Oil & Grease Groundwater Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**AC-01**	**AC-01**	**AC-02**	**AC-03**	**AC-04**
Client Sample ID:		**NJDEP Class IIA Aquifer: Higher of PQL or GWQC**	**Trenton Sewer Utility Local Limits**	**AC-01**	**DUP052311**	**AC-02**	**AC-03**	**AC-04**
Lab Sample ID:				**JA76604-4**	**JA76604-5**	**JA76604-8**	**JA76604-9**	**JA76604-2**
Date Sampled:				**5/23/2011**	**5/23/2011**	**5/23/2011**	**5/23/2011**	**5/23/2011**
Matrix:				**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Sample Method:				**Low Flow**	**Low Flow**	**Low Flow**	**Low Flow**	**Low Flow**
Dioxins								
2,3,7,8-TCDD	ug/l	0.00010	NS	0.00000682 U	0.0000067 U	0.00000739 U	0.00000681 U	0.00000671 U
Oil & Grease								
Oil and Grease	mg/l	NS	NS	1 B	0.85 U	1.3 B	0.85 U	1.6 B

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - analyte found in method blank

NS- No standard

ug/l - Microgram per Liter

PQL - Practical Quantitation Limit GWQC - Groundwater Quality Criterion

Value Exceeds NJDEP Class IIA: Higher of PQL or GWQC

Value Exceeds Trenton Sewer Utility Local Limits

Table 3-6: Total Toxic Organics Groundwater Analytical Results
USACE Assunpink Creek Restoration
Trenton, New Jersey

Sample Location:		PROJECT SCREENING LEVEL	AC-01	AC-01	AC-02	AC-03	AC-04
Client Sample ID:			AC-01	DUP052311	AC-02	AC-03	AC-04
Lab Sample ID:		Trenton Sewer Utility Local Limits	JA76604-4	JA76604-5	JA76604-8	JA76604-9	JA76604-2
Date Sampled:			5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
Matrix:			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Method:			Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Total Toxic Organics (TTO)							
TTO	ug/l	2130	0	0	0	0	0

Footnotes:

ug/l - Microgram per Liter

Value Exceeds Trenton Sewer Utility Local Limits

TTO is defined as the sum of all quantifiable amounts of organic compounds which are listed in the pretreatment standards in the Code of Federal Regulations 40CFR Part 433 and Appendix H of this report, and the concentration of which is equal to or greater than 10 ug/L.

Table 3-7: Comparison of Groundwater Results to Trenton Local Limits
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**Trenton Sewer Utility Local Limits**	**AC-01**	**AC-01**	**AC-02**	**AC-03**	**AC-04**
Client Sample ID:			**AC-01**	**DUP052311**	**AC-02**	**AC-03**	**AC-04**
Lab Sample ID:			**JA76604-4**	**JA76604-5**	**JA76604-8**	**JA76604-9**	**JA76604-2**
Date Sampled:			**5/23/2011**	**5/23/2011**	**5/23/2011**	**5/23/2011**	**5/23/2011**
Matrix:			**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**	**Groundwater**
Sample Method:			**Low Flow**	**Low Flow**	**Low Flow**	**Low Flow**	**Low Flow**
Metals							
Arsenic	ug/l	100	1.3 B	1.1 B	1.0 B	1.0 B	0.92 U
Barium	ug/l	2000	245	246	201	346	113 B
Cadmium	ug/l	20	0.20 B	0.20 B	0.17 U	0.17 U	0.17 U
Chromium	ug/l	1200	2.4 B	0.90 U	2.1 B	1.0 B	0.90 B
Copper	ug/l	200	1.6 B	1.0 B	1.6 B	0.85 U	0.90 B
Lead	ug/l	250	5.4	3.9	1.8 B	3.4	0.94 U
Mercury	ug/l	10	0.088 U	0.088 U	0.088 U	0.088 U	0.088 U
Nickel	ug/l	400	2.5 B	2.0 B	1.4 B	1.3 B	1.5 B
Selenium	ug/l	20	1.5 U	1.5 U	1.5 U	1.5 U	2.0 B
Silver	ug/l	2200	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U
Zinc	ug/l	800	41.6	37.6	6.6 B	3.3 B	6.4 B
SVOCs							
Phenol	ug/l	2000	0.58 U	0.58 U	0.63 U	0.58 U	0.58 U
Total Toxic Organics							
TTO	ug/l	2130	0	0	0	0	0
BTEX							
Benzene	ug/l	500	0.26 U	0.26 U	0.26 U	0.57 J	0.26 U
Ethylbenzene	ug/l	500	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
Toluene	ug/l	500	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
Xylene (total)	ug/l	500	0.28 U	0.28 U	0.28 U	0.37 J	0.28 U

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - Indicates a result >= MDL but < RL

ug/l - Microgram per Liter

Value Exceeds Trenton Sewer Utility Local Limits

Table 3-8: Metals and General Chemistry Groundwater Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		PROJECT SCREENING LEVELS		AC-01	AC-01	AC-02	AC-03	AC-04
Client Sample ID:		NJDEP Class IIA Aquifer: Higher of PQL or GWQC	Trenton Sewer Utility Local Limits	AC-01	DUP052311	AC-02	AC-03	AC-04
Lab Sample ID:				JA76604-4	JA76604-5	JA76604-8	JA76604-9	JA76604-2
Date Sampled:				5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
Matrix:				Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Method:				Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Metals								
Aluminum	ug/l	200	NS	66.3 B	36.1 B	22.6 B	37.1 B	21.3 B
Antimony	ug/l	6	NS	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
Arsenic	ug/l	3	100	1.3 B	1.1 B	1.0 B	1.0 B	0.92 U
Barium	ug/l	6000	2000	245	246	201	346	113 B
Beryllium	ug/l	1	NS	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Cadmium	ug/l	4	20	0.20 B	0.20 B	0.17 U	0.17 U	0.17 U
Calcium	ug/l	NS	NS	104000	105000	111000	112000	64000
Chromium	ug/l	70	1200	2.4 B	0.90 U	2.1 B	1.0 B	0.90 B
Cobalt	ug/l	NS	NS	2.3 B	2.2 B	1.4 B	0.30 U	0.30 U
Copper	ug/l	1300	200	1.6 B	1.0 B	1.6 B	0.85 U	0.90 B
Iron	ug/l	300	NS	5790	5790	2670	6600	60.3 B
Lead	ug/l	5	250	5.4	3.9	1.8 B	3.4	0.94 U
Magnesium	ug/l	NS	NS	57700	57900	81400	80200	31300
Manganese	ug/l	50	NS	2980	3000	1950	762	12.0 B
Mercury	ug/l	2	10	0.088 U	0.088 U	0.088 U	0.088 U	0.088 U
Nickel	ug/l	100	400	2.5 B	2.0 B	1.4 B	1.3 B	1.5 B
Potassium	ug/l	NS	NS	10400	10500	16300	13900	7500 B
Selenium	ug/l	40	20	1.5 U	1.5 U	1.5 U	1.5 U	2.0 B
Silver	ug/l	40	2200	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U
Sodium	ug/l	50000	NS	179000	181000	295000	165000	81200
Thallium	ug/l	2	NS	0.20 B	0.20 B	0.17 U	0.17 U	0.17 U
Tin	ug/l	NS	NS	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Vanadium	ug/l	NS	NS	1.1 B	1.0 B	0.80 B	0.60 B	0.43 U
Zinc	ug/l	2000	800	41.6	37.6	6.6 B	3.3 B	6.4 B
General Chemistry								
pH (field)	-	6.5 to 8.5	5.5 to 9.5	7.02	7.02	7.11	7.13	6.47
Biochemical Oxygen Demand	mg/l	NS	NS	3.3 B	1.3 U	1.3 U	0.50 U	2.4 B
Total Suspended Solids	mg/l	NS	NS	12	2.6 U	14	2.6 U	11

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - Indicates a result >= MDL but < RL

NS- No standard

ug/l - Microgram per Liter mg/l - Milligram per Liter

pH (field) = pH value measured in the field with Horiba U-52 water quality meter at time of sample collection

PQL - Practical Quantitation Limit GWQC - Groundwater Quality Criterion

Value Exceeds NJDEP Class IIA: Higher of PQL or GWQC

Value Exceeds Trenton Sewer Utility Local Limits

Table 3-9: Summary of Exceedences for Groundwater Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		PROJECT SCREENING LEVELS	AC-01	AC-01	AC-02	AC-03	AC-04
Client Sample ID:			AC-01	DUP052311	AC-02	AC-03	AC-04
Lab Sample ID:		NJDEP Class IIA Aquifer: Higher of PQL or GWQC	JA76604-4	JA76604-5	JA76604-8	JA76604-9	JA76604-2
Date Sampled:			5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
Matrix:			Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Sample Method:			Low Flow	Low Flow	Low Flow	Low Flow	Low Flow
Metals							
Iron	ug/l	300	5,790	5,790	2,670	6,600	--
Lead	ug/l	5	5.4	--	--	--	--
Manganese	ug/l	50	2,980	3,000	1,950	762	--
Sodium	ug/l	50,000	179,000	181,000	295,000	165,000	81,200
General Chemistry							
pH (field)	-	6.5 to 8.5	--	--	--	--	6.47

Footnotes:

-- analyte does not exceed PSL for this sample

ug/l - Microgram per Liter

pH (field) = pH value measured in the field with Horiba U-52 water quality meter at time of sample collection

PQL - Practical Quantitation Limit GWQC - Groundwater Quality Criterion

Value Exceeds NJDEP Class IIA Aquifer: Higher of PQL or GWQC

Table 4-1: Summary of Surface Water Analytical Methods and QC Samples
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Parameter	Method	Number of Primary Samples	Number of Duplicate Samples	Number of MS/MSD Samples
Volatile Organic Compounds (VOCs) + TICs	8260B [1]	2	0	0
Semi-Volatile Organic Compounds (SVOCs) + TICs	8270C [1]	2	0	0
Organochlorine Pesticides	8081A [1]	2	0	0
Chlorinated Herbicides	8151 [1]	2	0	0
Polychlorinated Biphenyls (PCBs)	8082 [1]	2	0	0
Oil & Grease	1664A [2] / 9071B [1]	2	0	0
Target Analyte List (TAL) Metals	6010B [1] / 7470A / 7471A[1]	2	0	0

Footnotes:

TICs - Tentatively Identified Compounds

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Method References:

1- USEPA. 2004. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 3rd Edition, Update IIIB.* Washington D.C.

2 - USEPA. 1999. *Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGTHEM;Non-polar Material) by Extraction and Gravimetry.*

Table 4-2: VOC Surface Water Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**SW-01 (Upstream)**	**SW-02 (Downstream)**
Client Sample ID:		**NJ Fresh Water Human Health Criteria**	**NJ Fresh Water Chronic Aquatic Criteria**	**SW-01**	**SW-02**
Lab Sample ID:				**JA76604-3**	**JA76604-7**
Date Sampled:				**5/23/2011**	**5/23/2011**
Matrix:				**Surface Water**	**Surface Water**
Sample Method:				**Grab (Kemmerer)**	**Grab (Kemmerer)**
Volatile Organic Compounds (VOCs)					
Acetone	ug/l	NS	NS	4.4 U	4.4 U
Benzene	ug/l	0.15	NS	0.26 U	0.26 U
Bromochloromethane	ug/l	NS	NS	0.79 U	0.79 U
Bromodichloromethane	ug/l	NS	NS	0.18 U	0.18 U
Bromoform	ug/l	NS	NS	0.42 U	0.42 U
Bromomethane	ug/l	NS	NS	0.24 U	0.24 U
2-Butanone (MEK)	ug/l	NS	NS	1.7 U	1.7 U
Carbon disulfide	ug/l	NS	NS	0.13 U	0.13 U
Carbon tetrachloride	ug/l	0.33	NS	0.35 U	0.35 U
Chlorobenzene	ug/l	210	NS	0.15 U	0.15 U
Chloroethane	ug/l	NS	NS	0.25 U	0.25 U
Chloroform	ug/l	68	NS	0.43 J	0.46 J
Chloromethane	ug/l	NS	NS	0.34 U	0.34 U
Cyclohexane	ug/l	NS	NS	0.43 U	0.43 U
1,2-Dibromo-3-chloropropane	ug/l	NS	NS	1.2 U	1.2 U
Dibromochloromethane	ug/l	0.40	NS	0.16 U	0.16 U
1,2-Dibromoethane	ug/l	NS	NS	0.39 U	0.39 U
1,2-Dichlorobenzene	ug/l	2000	NS	0.15 U	0.15 U
1,3-Dichlorobenzene	ug/l	2200	NS	0.19 U	0.19 U
1,4-Dichlorobenzene	ug/l	550	NS	0.22 U	0.22 U
Dichlorodifluoromethane	ug/l	NS	NS	0.39 U	0.39 U
1,1-Dichloroethane	ug/l	4.7	NS	0.16 U	0.16 U
1,2-Dichloroethane	ug/l	0.29	NS	0.31 U	0.31 U
1,1-Dichloroethene	ug/l	4.7	NS	0.24 U	0.24 U
cis-1,2-Dichloroethene	ug/l	NS	NS	0.24 U	0.24 U
trans-1,2-Dichloroethene	ug/l	590	NS	0.3 U	0.3 U
1,2-Dichloropropane	ug/l	0.50	NS	0.23 U	0.23 U
cis-1,3-Dichloropropene	ug/l	0.34	NS	0.16 U	0.16 U
trans-1,3-Dichloropropene	ug/l	0.34	NS	0.22 U	0.22 U
1,4-Dioxane	ug/l	NS	NS	39 U	39 U
Ethylbenzene	ug/l	530	NS	0.31 U	0.31 U
CFC 113	ug/l	NS	NS	0.66 U	0.66 U
2-Hexanone	ug/l	NS	NS	1.9 U	1.9 U
Isopropylbenzene	ug/l	NS	NS	0.31 U	0.31 U
Methyl Acetate	ug/l	NS	NS	1.3 U	1.3 U
Methylcyclohexane	ug/l	NS	NS	0.16 U	0.16 U
Methyl Tert Butyl Ether	ug/l	70	NS	0.2 U	0.2 U
4-Methyl-2-pentanone(MIBK)	ug/l	NS	NS	0.74 U	0.74 U
Methylene chloride	ug/l	2.5	NS	0.2 U	0.2 U
Styrene	ug/l	NS	NS	0.48 U	0.48 U
Tert Butyl Alcohol	ug/l	NS	NS	4 U	4 U
1,1,2,2-Tetrachloroethane	ug/l	4.7	NS	0.12 U	0.12 U
Tetrachloroethene	ug/l	0.34	NS	0.24 U	0.24 U
Toluene	ug/l	1300	NS	0.27 U	0.27 U
1,2,3-Trichlorobenzene	ug/l	NS	NS	0.29 U	0.29 U
1,2,4-Trichlorobenzene	ug/l	21	NS	0.16 U	0.16 U
1,1,1-Trichloroethane	ug/l	120	NS	0.2 U	0.2 U
1,1,2-Trichloroethane	ug/l	13	NS	0.13 U	0.13 U
Trichloroethene	ug/l	1.0	NS	0.22 U	0.22 U
Trichlorofluoromethane	ug/l	NS	NS	0.23 U	0.23 U

Table 4-2: VOC Surface Water Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**SW-01 (Upstream)**	**SW-02 (Downstream)**
Client Sample ID:		**NJ Fresh Water Human Health Criteria**	**NJ Fresh Water Chronic Aquatic Criteria**	**SW-01**	**SW-02**
Lab Sample ID:				**JA76604-3**	**JA76604-7**
Date Sampled:				**5/23/2011**	**5/23/2011**
Matrix:				**Surface Water**	**Surface Water**
Sample Method:				**Grab (Kemmerer)**	**Grab (Kemmerer)**
Volatile Organic Compounds (VOCs)					
Vinyl chloride	ug/l	0.082	NS	0.22 U	0.22 U
m,p-Xylene	ug/l	NS	NS	0.39 U	0.39 U
o-Xylene	ug/l	NS	NS	0.28 U	0.28 U
Xylene (total)	ug/l	NS	NS	0.28 U	0.28 U
VOC Tentatively Identified Compounds (TICs)					
Total TICs, Volatile	ug/l	NS	NS	0	0

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - analyte found in method blank

NS- No standard ug/l - Microgram per Liter

Concentration exceeds the NJ Fresh Water Human Health Criteria

Concentration exceeds the NJ Fresh Water Chronic Aquatic Criteria

Table 4-3: SVOC and Oil & Grease Surface Water Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**SW-01 (Upstream)**	**SW-02 (Downstream)**
Client Sample ID:		**NJ Fresh Water Human Health Criteria**	**NJ Fresh Water Chronic Aquatic Criteria**	**SW-01**	**SW-02**
Lab Sample ID:				**JA76604-3**	**JA76604-7**
Date Sampled:				**5/23/2011**	**5/23/2011**
Matrix:				**Surface Water**	**Surface Water**
Sample Method:				**Grab (Kemmerer)**	**Grab (Kemmerer)**
Semi-Volatile Organic Compounds (SVOCs)					
2-Chlorophenol	ug/l	81	NS	1.2 U	1.2 U
1,2,4,5-Tetrachlorobenzene	ug/l	NS	NS	0.55 U	0.52 U
2,3,4,6-Tetrachlorophenol	ug/l	NS	NS	0.92 U	0.87 U
2,4,5-Trichlorophenol	ug/l	1800	NS	1.5 U	1.4 U
2,4,6-Trichlorophenol	ug/l	0.58	NS	1.4 U	1.3 U
2,4-Dichlorophenol	ug/l	77	NS	1.4 U	1.3 U
2,4-Dimethylphenol	ug/l	380	NS	1.9 U	1.8 U
2,4-Dinitrophenol	ug/l	69	NS	0.84 U	0.79 U
2,4-Dinitrotoluene	ug/l	0.11	NS	0.25 U	0.24 U
2,6-Dinitrotoluene	ug/l	NS	NS	0.37 U	0.35 U
2-Chloronaphthalene	ug/l	1000	NS	0.47 U	0.45 U
2-Methylnaphthalene	ug/l	NS	NS	0.77 J	0.71 U
2-Methylphenol	ug/l	NS	NS	1.3 U	1.2 U
2-Nitroaniline	ug/l	NS	NS	0.27 U	0.25 U
2-Nitrophenol	ug/l	NS	NS	1.4 U	1.3 U
3&4-Methylphenol	ug/l	NS	NS	1.2 U	1.1 U
3,3'-Dichlorobenzidine	ug/l	0.29	NS	0.34 U	0.32 U
3-Nitroaniline	ug/l	NS	NS	0.33 U	0.31 U
4,6-Dinitro-o-cresol	ug/l	13	NS	0.58 U	0.55 U
4-Chloro-3-methyl phenol	ug/l	NS	NS	1.2 U	1.1 U
4-Chloroaniline	ug/l	NS	NS	0.29 U	0.27 U
4-Chlorophenyl phenyl ether	ug/l	NS	NS	0.4 U	0.38 U
4-Nitroaniline	ug/l	NS	NS	0.2 U	0.19 U
4-Nitrophenol	ug/l	NS	NS	0.94 U	0.89 U
Acenaphthene	ug/l	670	NS	0.016 U	0.015 U
Acenaphthylene	ug/l	NS	NS	0.018 U	0.017 U
Acetophenone	ug/l	NS	NS	0.45 U	0.43 U
Anthracene	ug/l	8300	NS	0.011 U	0.011 U
Atrazine	ug/l	NS	NS	0.44 U	0.42 U
Benzaldehyde	ug/l	NS	NS	0.46 U	0.43 U
Benzo(a)anthracene	ug/l	0.038	NS	0.017 U	0.016 U
Benzo(a)pyrene	ug/l	0.0038	NS	0.0056 U	0.0053 U
Benzo(b)fluoranthene	ug/l	0.038	NS	0.019 U	0.018 U
Benzo(g,h,i)perylene	ug/l	0.0038	NS	0.012 U	0.011 U
Benzo(k)fluoranthene	ug/l	0.38	NS	0.014 U	0.013 U
1,1'-Biphenyl	ug/l	NS	NS	0.48 U	0.45 U
bis(2-Chloroethoxy)methane	ug/l	NS	NS	0.28 U	0.27 U
bis(2-Chloroethyl)ether	ug/l	0.030	NS	0.35 U	0.33 U
bis(2-Chloroisopropyl)ether	ug/l	1400	NS	0.44 U	0.42 U
bis(2-Ethylhexyl)phthalate	ug/l	1.2	NS	0.37 U	1.2 J
4-Bromophenyl phenyl ether	ug/l	NS	NS	0.4 U	0.38 U
Butyl benzyl phthalate	ug/l	150	NS	0.29 U	0.27 U
Caprolactam	ug/l	NS	NS	0.22 U	0.21 U
Carbazole	ug/l	NS	NS	0.19 U	0.18 U
Chrysene	ug/l	3.8	NS	0.026 U	0.025 U
Dibenzo(a,h)anthracene	ug/l	0.0038	NS	0.026 U	0.024 U
Dibenzofuran	ug/l	NS	NS	0.35 U	0.33 U
Diethyl phthalate	ug/l	17000	NS	0.19 U	0.18 U
Dimethyl phthalate	ug/l	NS	NS	0.26 U	0.24 U
Di-n-butyl phthalate	ug/l	2000	NS	0.22 U	0.21 U
Di-n-octyl phthalate	ug/l	NS	NS	0.45 U	0.42 U
Fluoranthene	ug/l	130	NS	0.011 U	0.01 U
Fluorene	ug/l	1100	NS	0.017 U	0.016 U
Hexachlorobenzene	ug/l	0.00028	NS	0.0091 U	0.0086 U
Hexachlorobutadiene	ug/l	0.44	NS	0.14 U	0.14 U
Hexachlorocyclopentadiene	ug/l	40	NS	0.28 U	0.26 U
Hexachloroethane	ug/l	1.4	NS	0.24 U	0.22 U
Indeno(1,2,3-cd)pyrene	ug/l	0.038	NS	0.012 U	0.011 U
Isophorone	ug/l	35	NS	0.28 U	0.27 U
Naphthalene	ug/l	NS	NS	0.018 U	0.017 U

Table 4-3: SVOC and Oil & Grease Surface Water Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**SW-01 (Upstream)**	**SW-02 (Downstream)**
Client Sample ID:		**NJ Fresh Water Human Health Criteria**	**NJ Fresh Water Chronic Aquatic Criteria**	**SW-01**	**SW-02**
Lab Sample ID:				**JA76604-3**	**JA76604-7**
Date Sampled:				**5/23/2011**	**5/23/2011**
Matrix:				**Surface Water**	**Surface Water**
Sample Method:				**Grab (Kemmerer)**	**Grab (Kemmerer)**
Semi-Volatile Organic Compounds (SVOCs)					
Nitrobenzene	ug/l	17	NS	0.29 U	0.27 U
N-Nitroso-di-n-propylamine	ug/l	0.0050	NS	0.5 U	0.47 U
N-Nitrosodiphenylamine	ug/l	3.3	NS	0.24 U	0.23 U
Pentachlorophenol	ug/l	0.27	NS	0.32 U	0.31 U
Phenanthrene	ug/l	NS	NS	0.018 U	0.017 U
Phenol	ug/l	10000	NS	0.66 U	0.62 U
Pyrene	ug/l	830	NS	0.0092 U	0.0087 U
Pyridine	ug/l	NS	NS	0.31 U	0.29 U
SVOC Tentatively Identified Compounds (TICs)					
Total TIC, Semi-Volatile	ug/l	NS	NS	0	0
Oil & Grease					
Oil and Grease	mg/l	NS	NS	1.0 U	1.9 B

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - analyte found in method blank

NS- No standard ug/l - Microgram per Liter mg/l - Milligram per Liter

Concentration exceeds the NJ Fresh Water Human Health Criteria

Concentration exceeds the NJ Fresh Water Chronic Aquatic Criteria

Table 4-4: Pesticide, Herbicide, and PCB Surface Water Analytical Results
USACE Assunpink Creek Restoration
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**SW-01 (Upstream)**	**SW-02 (Downstream)**
Client Sample ID:		**NJ Fresh Water Human Health Criteria**	**NJ Fresh Water Chronic Aquatic Criteria**	**SW-01**	**SW-02**
Lab Sample ID:				**JA76604-3**	**JA76604-7**
Date Sampled:				**5/23/2011**	**5/23/2011**
Matrix:				**Surface Water**	**Surface Water**
Sample Method:				**Grab (Kemmerer)**	**Grab (Kemmerer)**
Pesticides					
Aldrin	ug/l	0.000049	NS	0.01 U	0.01 U
alpha-BHC	ug/l	0.0026	NS	0.0044 U	0.0043 U
beta-BHC	ug/l	0.0091	NS	0.0029 U	0.0029 U
delta-BHC	ug/l	NS	NS	0.0069 U	0.0067 U
gamma-BHC (Lindane)	ug/l	0.98	NS	0.0021 U	0.002 U
alpha-Chlordane	ug/l	0.00010	0.0043	0.0055 U	0.0054 U
gamma-Chlordane	ug/l	0.00010	0.0043	0.0026 U	0.0025 U
Dieldrin	ug/l	0.000052	0.056	0.0037 U	0.0036 U
4,4'-DDD	ug/l	0.00031	NS	0.0038 U	0.0037 U
4,4'-DDE	ug/l	0.00022	NS	0.0033 U	0.0032 U
4,4'-DDT	ug/l	0.00022	0.001	0.0066 U	0.0065 U
Endrin	ug/l	0.059	0.036	0.0071 U	0.0069 U
Endosulfan sulfate	ug/l	62	NS	0.0071 U	0.007 U
Endrin aldehyde	ug/l	0.059	NS	0.0032 U	0.0031 U
Endrin ketone	ug/l	NS	NS	0.0045 U	0.0044 U
Endosulfan-I	ug/l	62	NS	0.0034 U	0.0033 U
Endosulfan-II	ug/l	62	NS	0.0031 U	0.003 U
Heptachlor	ug/l	0.000079	0.0038	0.0093 U	0.0091 U
Heptachlor epoxide	ug/l	0.000039	0.0038	0.0042 U	0.0041 U
Methoxychlor	ug/l	40	NS	0.0091 U	0.0089 U
Toxaphene	ug/l	0.00028	0.002	0.28 U	0.27 U
Herbicides					
2,4-D	ug/l	NS	NS	0.21 U	0.18 U
2,4,5-TP (Silvex)	ug/l	NS	NS	0.033 U	0.029 U
2,4,5-T	ug/l	NS	NS	0.025 U	0.022 U
Dalapon	ug/l	NS	NS	0.044 U	0.039 U
Dicamba	ug/l	NS	NS	0.052 U	0.046 U
Dichloroprop	ug/l	NS	NS	0.16 U	0.14 U
Dinoseb	ug/l	NS	NS	0.089 U	0.079 U
MCPA	ug/l	NS	NS	20 U	17 U
MCPP	ug/l	NS	NS	8.6 U	7.6 U
Pentachlorophenol	ug/l	0.27	NS	0.03 U	0.027 U
2,4-DB	ug/l	NS	NS	0.19 U	0.17 U
Polychlorinated Biphenyls (PCBs)					
Aroclor 1016	ug/l	NS	0.014	0.14 U	0.14 U
Aroclor 1221	ug/l	NS	0.014	0.3 U	0.29 U
Aroclor 1232	ug/l	NS	0.014	0.43 U	0.42 U
Aroclor 1242	ug/l	NS	0.014	0.096 U	0.093 U
Aroclor 1248	ug/l	NS	0.014	0.16 U	0.16 U
Aroclor 1254	ug/l	NS	0.014	0.16 U	0.15 U
Aroclor 1260	ug/l	NS	0.014	0.23 U	0.23 U
Aroclor 1268	ug/l	NS	0.014	0.14 U	0.14 U
Aroclor 1262	ug/l	NS	0.014	0.067 U	0.065 U

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - analyte found in method blank

NS- No standard ug/l - Microgram per Liter

Concentration exceeds the NJ Fresh Water Human Health Criteria

Concentration exceeds the NJ Fresh Water Chronic Aquatic Criteria

Table 4-5: Metals Surface Water Analytical Results
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Sample Location:		**PROJECT SCREENING LEVELS**		**SW-01 (Upstream)**	**SW-02 (Downstream)**
Client Sample ID:		**NJ Fresh Water Human Health Criteria**	**NJ Fresh Water Chronic Aquatic Criteria**	**SW-01**	**SW-02**
Lab Sample ID:				**JA76604-3**	**JA76604-7**
Date Sampled:				**5/23/2011**	**5/23/2011**
Matrix:				**Surface Water**	**Surface Water**
Sample Method:				**Grab (Kemmerer)**	**Grab (Kemmerer)**
Metals					
Aluminum	ug/l	NS	NS	353	354
Antimony	ug/l	5.6	NS	1.3 U	1.3 U
Arsenic	ug/l	0.017	150	0.92 U	0.92 U
Barium	ug/l	2000	NS	61.3 B	63.7 B
Beryllium	ug/l	6.0	NS	0.24 U	0.24 U
Cadmium	ug/l	3.4	0.24*	0.17 U	0.20 B
Calcium	ug/l	NS	NS	16700	17500
Chromium	ug/l	92	NS	0.90 B	0.90 B
Cobalt	ug/l	NS	NS	0.70 B	0.80 B
Copper	ug/l	1300	11.98*	4.4 B	5.2 B
Iron	ug/l	NS	NS	1370	1380
Lead	ug/l	5.0	5.0	3.2	2.8 B
Magnesium	ug/l	NS	NS	5430	5650
Manganese	ug/l	NS	NS	142	140
Mercury	ug/l	0.050	1	0.088 U	0.088 U
Nickel	ug/l	500	62.19*	2.4 B	2.5 B
Potassium	ug/l	NS	NS	2630 B	2830 B
Selenium	ug/l	170	5	1.5 U	1.5 U
Silver	ug/l	170	NS	0.72 U	0.72 U
Sodium	ug/l	NS	NS	23500	24900
Thallium	ug/l	0.24	NS	0.17 U	0.17 U
Tin	ug/l	NS	NS	1.1 U	1.1 U
Vanadium	ug/l	NS	NS	1.4 B	1.3 B
Zinc	ug/l	7400	160.49 *	21.2	22.9

Footnotes:

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - Indicates a result >= MDL but < RL

NS- No standard ug/l - Microgram per Liter

Concentration exceeds the NJ Fresh Water Human Health Criteria

Concentration exceeds the NJ Fresh Water Chronic Aquatic Criteria

* - Calculated based on an assumed hardness of 150 mg/L as $CaCO_3$

Table 5-1: Summary of IDW Analytical Methods and QC Samples
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Parameter	Method	Number of Primary Samples	Number of Duplicate Samples	Number of MS/MSD Samples
Volatile Organic Compounds (VOCs)	8260B [1]	2	0	0
Semi-Volatile Organic Compounds (SVOCs)	8270C [1]	2	0	0
Organochlorine Pesticides	8081A [1]	2	0	0
Chlorinated Herbicides	8151 [1]	2	0	0
Target Analyte List (TAL) Metals	6010B [1] / 7470A / 7471A[1]	2	0	0
Ignitability (Aqueous)	SW846 1010A / ASTM D93	1	0	0
Ignitability (Solids)	SW846 Chapter 7 / ASTM D93	1	0	0
Corrosivity	SW846 Chapter 7 / 9045C [1]	2	0	0
Reactive Cyanide	SW846 Chapter 7 / 9012B [1]	2	0	0
Reactive Sulfide	SW846 Chapter 7 / 9034 [1]	2	0	0

Footnotes:

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Primary Samples include one solids (soil) sample and one aqueous (fluids) sample

Method References:

1- USEPA. 2004. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 3rd Edition, Update IIIB.* Washington D.C.

Table 5-2: Solid and Aqueous IDW Analytical Results
USACE Assunpink Creek Restoration
Trenton, New Jersey

Client Sample ID:		**RCRA Maximum Contaminant Concentrations (40 CFR 261 6/96)**	**IDW052311**	**IDW052311**
Lab Sample ID:			**JA76604-12**	**JA76604-11**
Date Sampled:			**5/23/2011**	**5/23/2011**
Matrix:			**Solids (soil)**	**Aqueous (fluids)**
General Chemistry				
Corrosivity as pH	su	< 2 or > 12	7.68	8.08
Cyanide Reactivity	mg/kg	250	4.3 U	0.92 U
Sulfide Reactivity	mg/kg	500	18 U	69 U
Ignitability (Flashpoint)	Deg. F	<140	>200	>200
Solids, Percent	%	NS	87.9	NA
Volatile Organic Compounds (VOCs)				
Benzene	mg/l	0.5	0.0012 U	0.0012 U
2-Butanone (MEK)	mg/l	200	0.0081 U	0.0081 U
Carbon tetrachloride	mg/l	0.5	0.0013 U	0.0013 U
Chlorobenzene	mg/l	100	0.0019 U	0.0019 U
Chloroform	mg/l	6	0.0012 U	0.0012 U
1,4-Dichlorobenzene	mg/l	7.5	0.0014 U	0.0014 U
1,2-Dichloroethane	mg/l	0.5	0.0017 U	0.0017 U
1,1-Dichloroethene	mg/l	0.7	0.002 U	0.002 U
Tetrachloroethene	mg/l	0.7	0.0013 U	0.0013 U
Trichloroethene	mg/l	0.5	0.0012 U	0.0012 U
Vinyl chloride	mg/l	0.2	0.0022 U	0.0022 U
Semi-Volatile Organic Compounds (SVOCs)				
2-Methylphenol	mg/l	200	0.011 U	0.011 U
3&4-Methylphenol	mg/l	200	0.01 U	0.01 U
Pentachlorophenol	mg/l	100	0.008 U	0.008 U
2,4,5-Trichlorophenol	mg/l	400	0.013 U	0.013 U
2,4,6-Trichlorophenol	mg/l	2	0.012 U	0.012 U
1,4-Dichlorobenzene	mg/l	7.5	0.0039 U	0.0039 U
2,4-Dinitrotoluene	mg/l	0.13	0.0022 U	0.0022 U
Hexachlorobenzene	mg/l	0.13	0.0037 U	0.0037 U
Hexachlorobutadiene	mg/l	0.5	0.0037 U	0.0037 U
Hexachloroethane	mg/l	3	0.0026 U	0.0026 U
Nitrobenzene	mg/l	2	0.0025 U	0.0025 U
Pyridine	mg/l	5	0.0027 U	0.0027 U
Pesticides				
gamma-BHC (Lindane)	mg/l	0.4	0.000011 U	0.000011 U
Chlordane	mg/l	0.03	0.00079 U	0.00079 U
Endrin	mg/l	0.02	0.000031 U	0.000031 U
Heptachlor	mg/l	0.008	0.00002 U	0.00002 U
Heptachlor epoxide	mg/l	0.008	0.000016 U	0.000016 U
Methoxychlor	mg/l	10	0.000068 U	0.000068 U
Toxaphene	mg/l	0.5	0.0021 U	0.0021 U
Herbicides				
2,4-D	mg/l	10	0.0013 U	0.0013 U
2,4,5-TP (Silvex)	mg/l	1	0.00018 U	0.00018 U
Metals				
Arsenic	mg/l	5	0.0033 B	0.0027 U
Barium	mg/l	100	0.65 B	0.11 B
Cadmium	mg/l	1	0.0054	0.00049 U
Chromium	mg/l	5	0.0084 B	0.00083 U
Lead	mg/l	5	0.19 B	0.0061 B
Mercury	mg/l	0.2	0.000088 U	0.000088 U
Selenium	mg/l	1	0.0074 B	0.0041 U
Silver	mg/l	5	0.00066 U	0.00066 U

Footnotes:

Aqueous (Fluids) IDW sample includes development water, purge water, and decontamination

U - result < listed method detection limit

Non-detected results are reported to the method detection limit

J - estimated result B - Indicates a result >= MDL but < RL

NS- No standard NA - Not analyzed

mg/kg - Milligrams per Kilogram mg/l - Milligrams per Liter

su - standard unit Deg. F - degrees Farenheit

Table 6: Summary of Calculated Hydraulic Conductivity Values
USACE Assunpink Creek Resoration Project
Trenton, New Jersey

Monitoring Well ID	Test #1	Test #2	Test #3	Average
AC-01	19.10	14.36	16.56	16.67
AC-02	20.00	19.25	19.29	19.51
AC-03	116.10	116.26	109.02	113.79
AC-04	45.43	45.55	42.68	44.55

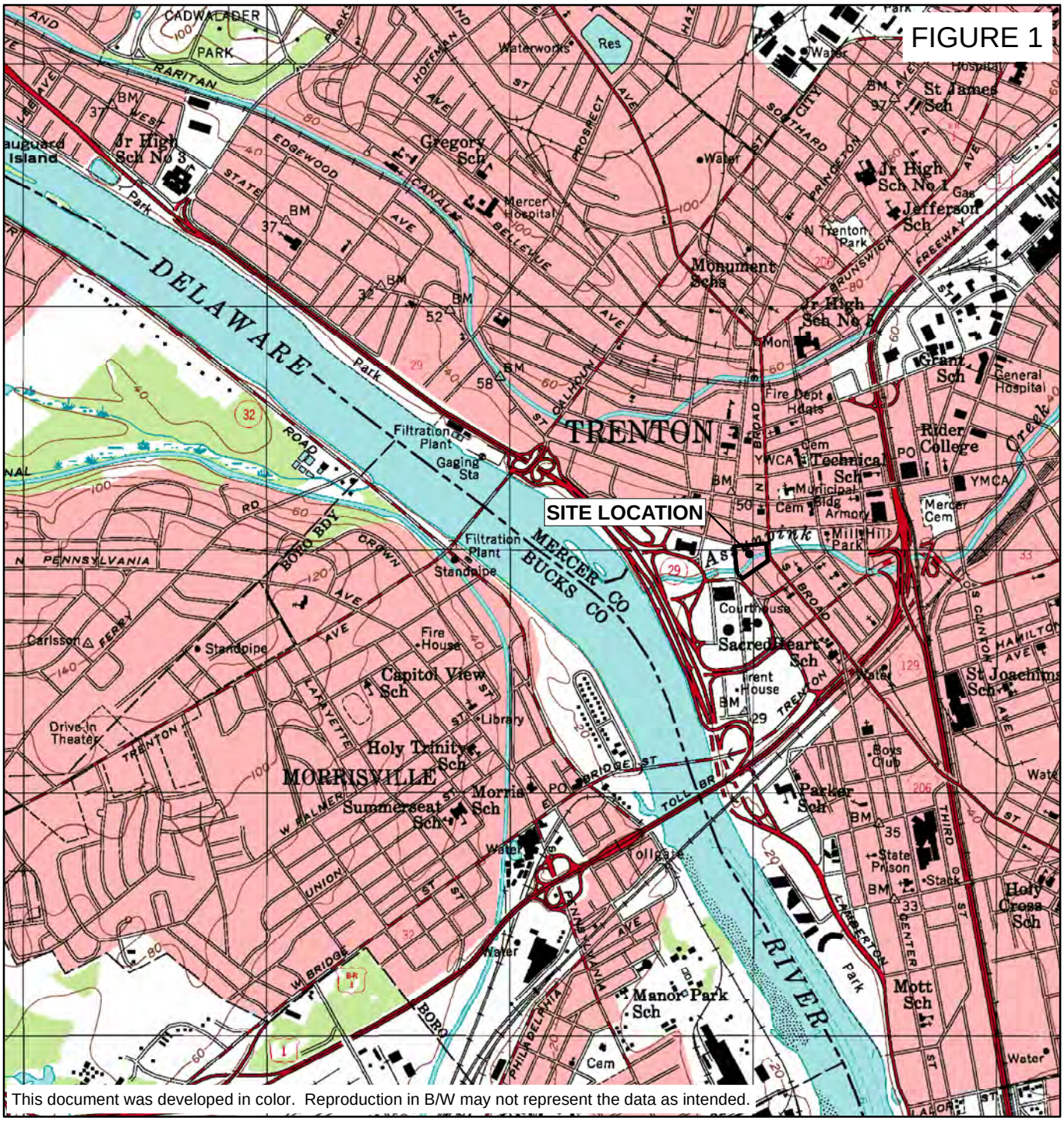
Footnotes:
Hydraulic conductivity calculcated using the Bower and Rice Method
Hydraulic conductivity values in feet/day

Table 7: Groundwater, Surface Water, and Weephole Elevation Data
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

Monitoring Well / Surface Water Station ID	Total Depth of Soil Boring or Well[1]	Measuring Point Elevation [2]	May 23, 2011			June 8, 2011		
			DTW[3]	DTP [3]	Elevation [2]	DTW[3]	DTP [3]	Elevation [2]
MW-2	19	29.89	NM	NM	NM	12.83	12.78	17.10 *
MW-5	20	27.68	NM	NM	NM	10.91	ND	16.77
AC-01	20	24.90	12.30	ND	12.60	12.70	ND	12.20
AC-02	14.3	22.71	9.77	ND	12.94	10.12	ND	12.59
AC-03	11.5	22.17	10.22	ND	11.95	10.32	ND	11.85
AC-04	14.3	22.64	9.66	ND	12.98	9.70	ND	12.94
SW-01	--	20.06	10.70	ND	9.36	11.01	ND	9.05
SW-02	--	27.99	19.30	ND	8.69	20.12	ND	7.87
WP-1	--	9.2	--	--	--	--	--	--
WP-2	--	9.8 (0.3'±)	--	--	--	--	--	--
WP-3	--	10.0 (0.3'±)	--	--	--	--	--	--

Footnotes:
1 - feet below ground surface
2 - feet NAVD 1988
3 - feet below measuring point
DTW - Depth to Water DTP - Depth to Product
NA - not available NM - not measured ND - No product detected in the well
* MW-2 ground water elevation has been corrected for product thickness where applicable, using an assumed specific gravity of 0.87 for the free-phase product.
- Weepholes designated as WP; elevations shown are the bottom of the weephole.

Figures



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PLOT DATE: 7/27/2011 KaufmaDR

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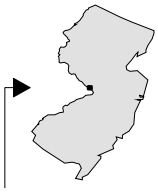
US ARMY CORPS OF ENGINEERS
ASSUNPINK CREEK RESTORATION
TRENTON, NEW JERSEY



MAP LOCATION

N

SITE LOCATION

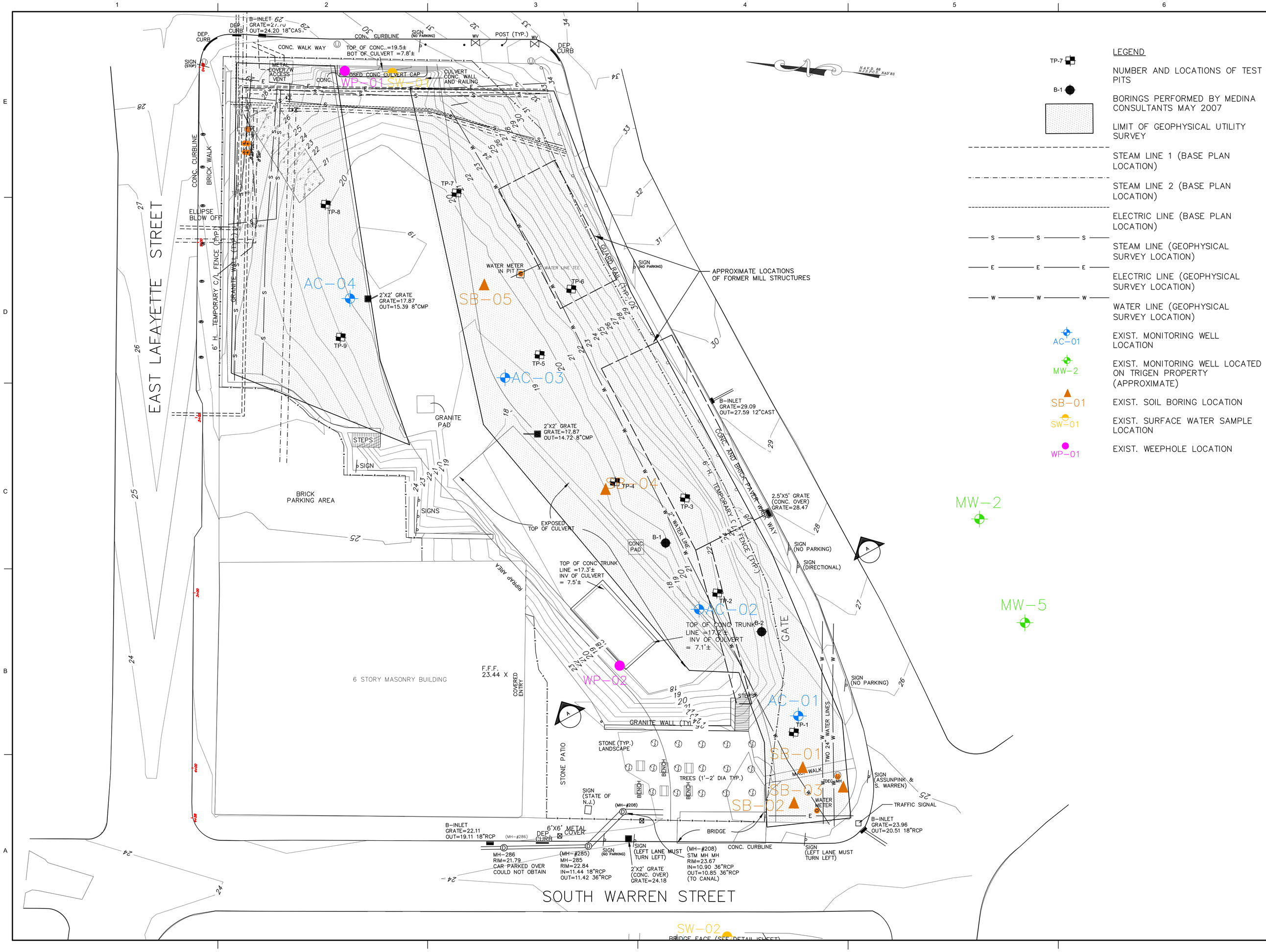
0 1,000 2,000 4,000 6,000 8,000

Feet

AUGUST 2011
12124/47289

1:24,000

O'BRIEN & GERE



US Army Corps of Engineers Philadelphia District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE
A	ISSUED FOR COMMENTS	11/19/2010	DDW			
1	ISSUED FOR FINAL REPORT	1/14/2011	DDW			

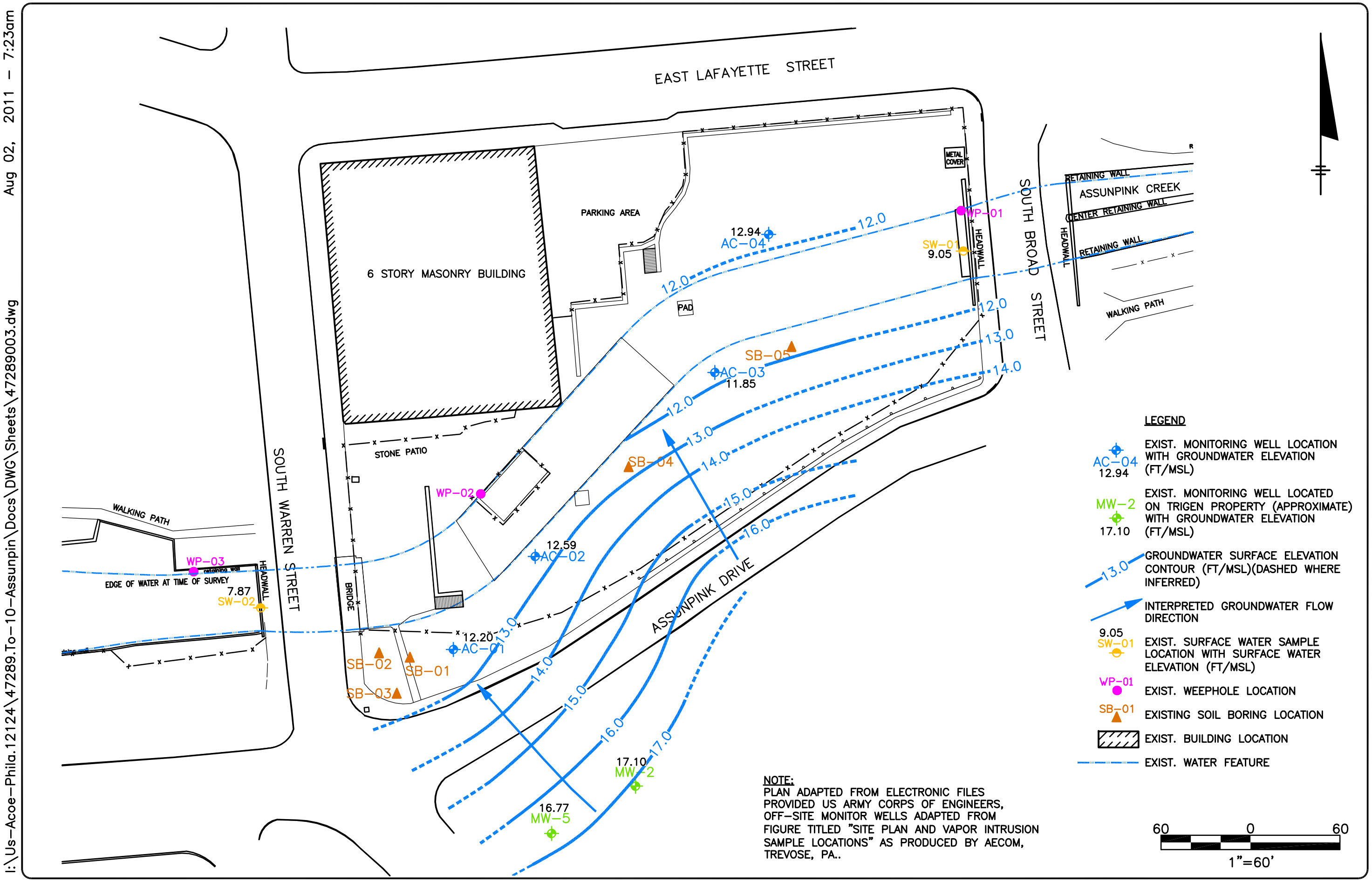
DESIGNED BY: D.E.WHITESTONE | DATE: JANUARY 2011
DWN BY: W.R.P. | CKD BY: X | SOLICITATION NO.: X
SUBMITTED BY: X | CONTRACT NO.: X
PLOT SCALE: 1=20' | PLOT DATE: 01/31/2011 | FILE NUMBER: X
SIZE: ANSI F | FILE NAME: 1120-UMBF-FIG-2.DWG

U.S. ARMY CORPS OF ENGINEERS
PHILADELPHIA DISTRICT
PHILADELPHIA, PENNSYLVANIA

O'BRIEN & GERE
ENGINEERS, INC.
SUNTRUST CORPORATE CENTER, 2005 LAKE ROBBINS DRIVE, SUITE 325
THE WOODLANDS, TEXAS 77380
PHONE: (281) 367-7700 FAX: (281) 367-7711
2010 O'Brien & Gere Engineers, Inc.

TEST PIT LOCATION PLAN ASSUNPINK CREEK RESTORATION PROJECT TRENTON, NEW JERSEY

SHEET IDENTIFICATION
FIG-2



AUG. 2011

MH
RJD

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GROUNDWATER SURFACE ELEVATION MAP 06/08/11

ASSUNPINK CREEK RESTORATION PROJECT
TRENTON, NEW JERSEY

FIGURE
3

I:\Us-Acoe-Phila.12124\47289.To-10-Assunpin\Docs\DWG\Sheets\47289003.dwg Aug 02, 2011 - 7:23am

Figure 4-1: Slug Test/Hydraulic Conductivity Plot for AC-01, Test #1

USACE Assunpink Restoration Project

Trenton, New Jersey

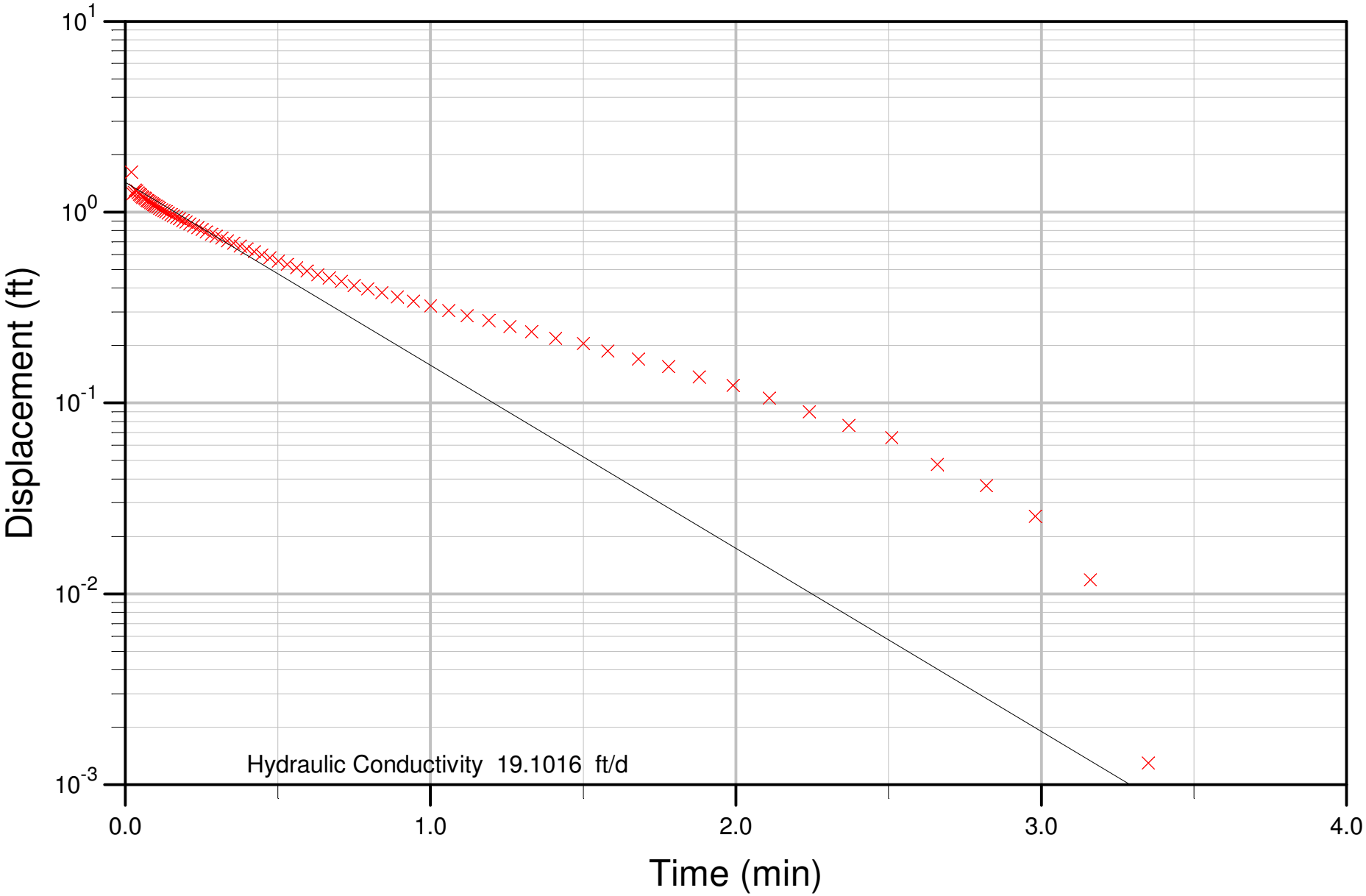


Figure 4-2: Slug Test/Hydraulic Conductivity Plot for AC-01, Test #2

USACE Assunpink Restoration Project

Trenton, New Jersey

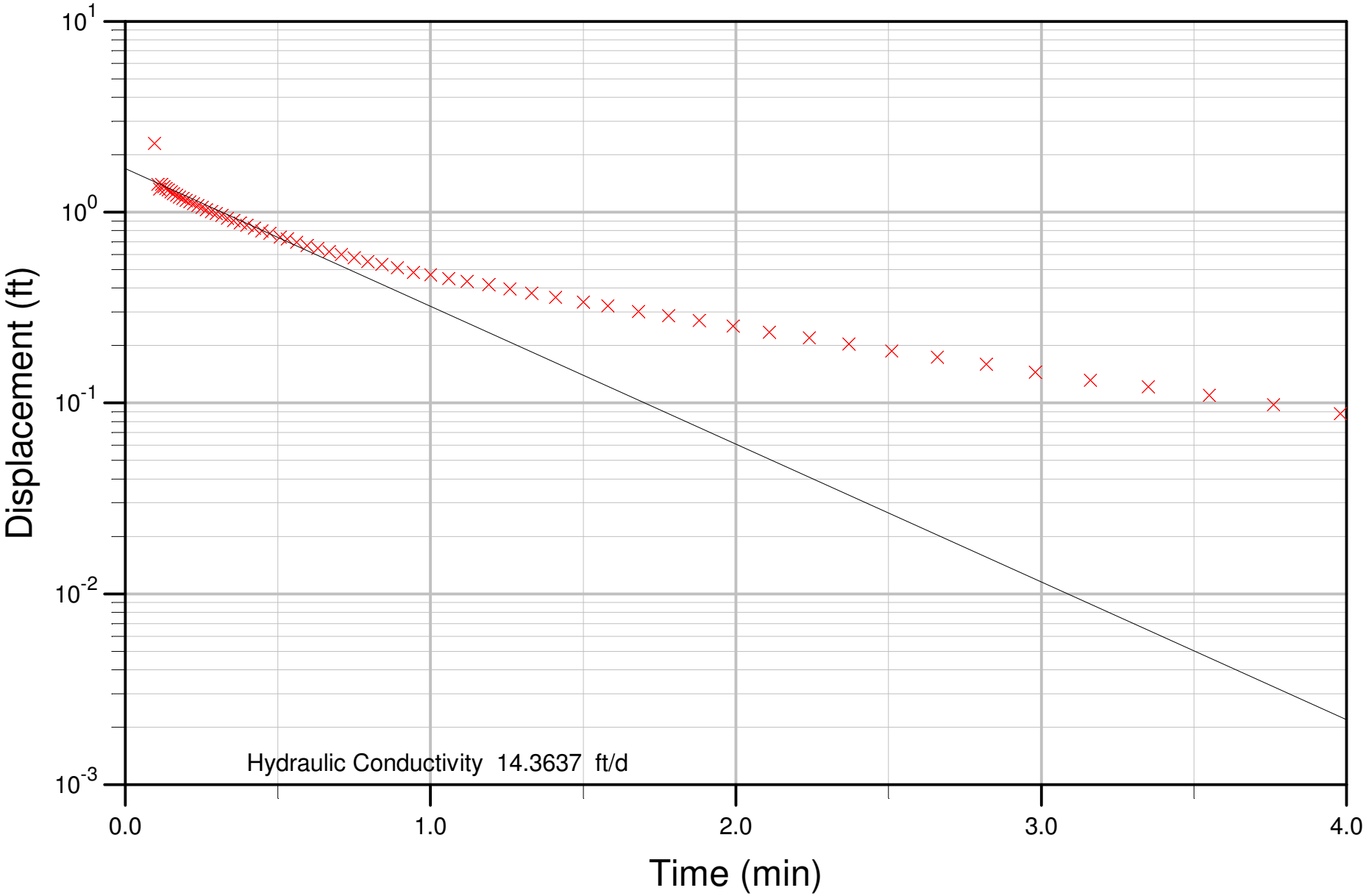


Figure 4-3: Slug Test/Hydraulic Conductivity Plot for AC-01, Test #3

USACE Assunpink Restoration Project

Trenton, New Jersey

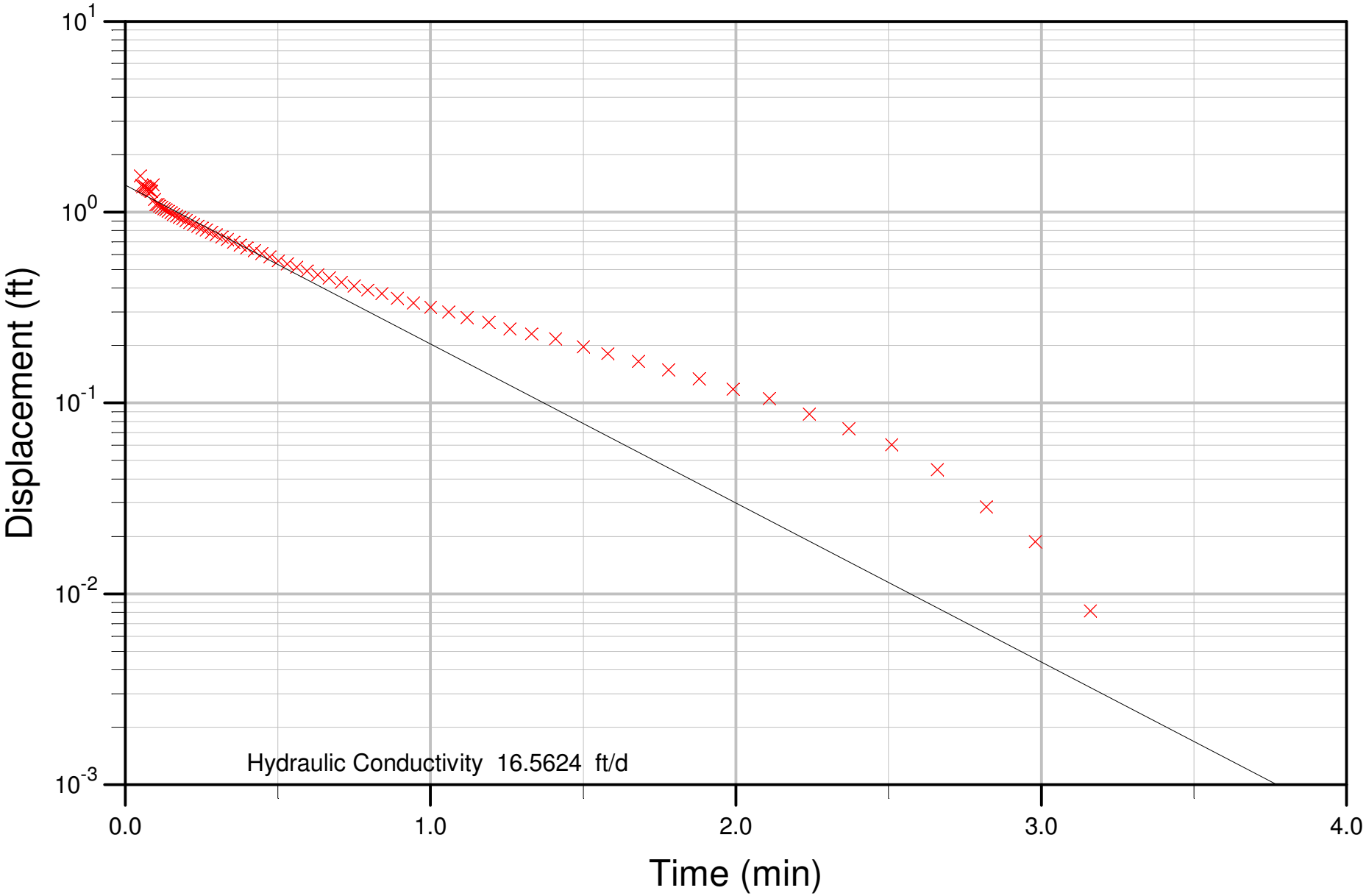


Figure 4-4: Slug Test/Hydraulic Conductivity Plot for AC-02, Test #1

USACE Assunpink Restoration Project

Trenton, New Jersey

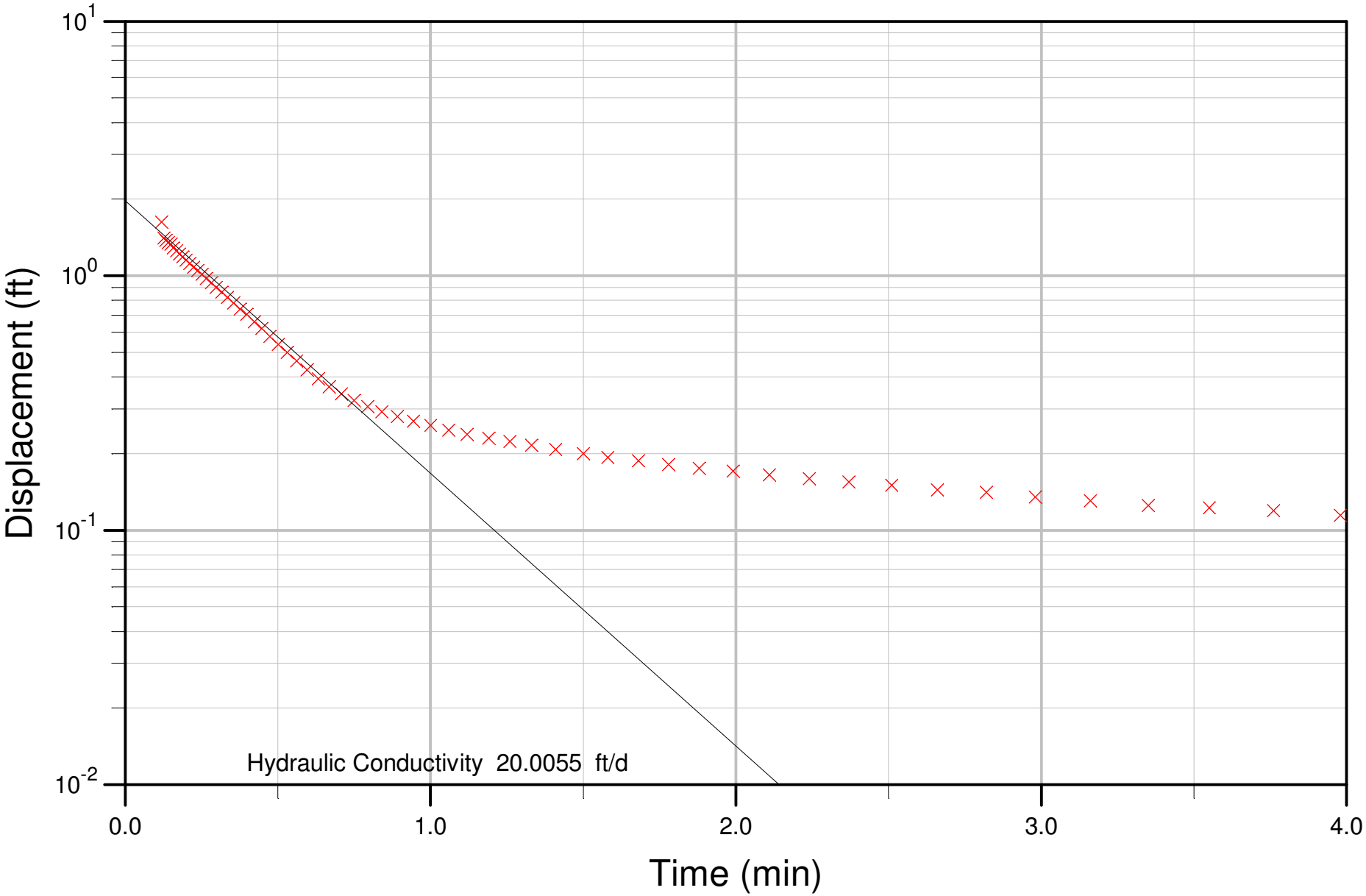


Figure 4-5: Slug Test/Hydraulic Conductivity Plot for AC-02, Test #2

USACE Assunpink Restoration Project

Trenton, New Jersey

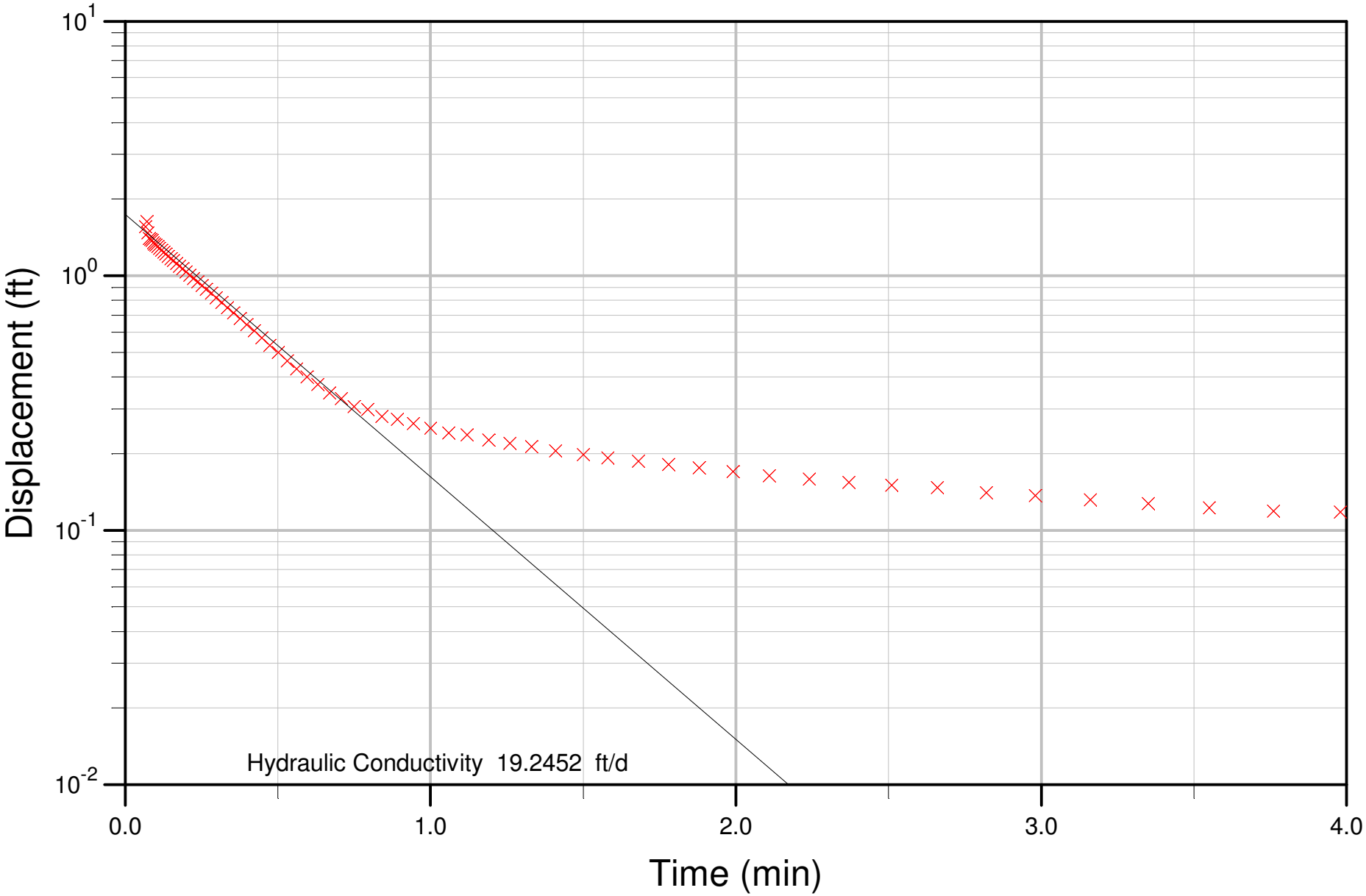


Figure 4-6 Slug Test/Hydraulic Conductivity Plot for AC-02, Test #3

USACE Assunpink Restoration Project

Trenton, New Jersey

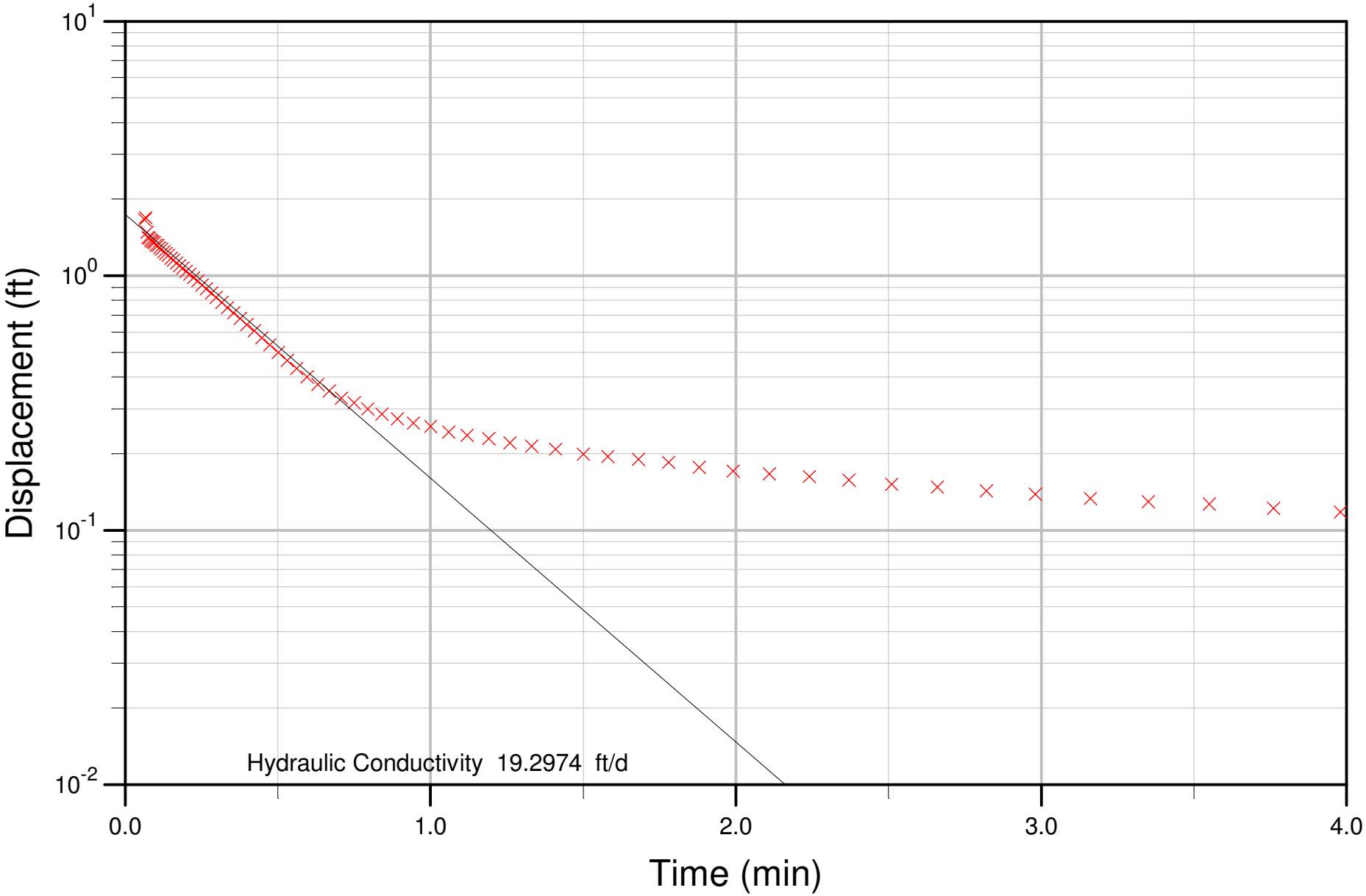


Figure 4-7: Slug Test/Hydraulic Conductivity Plot for AC-03, Test #1

USACE Assunpink Restoration Project

Trenton, New Jersey

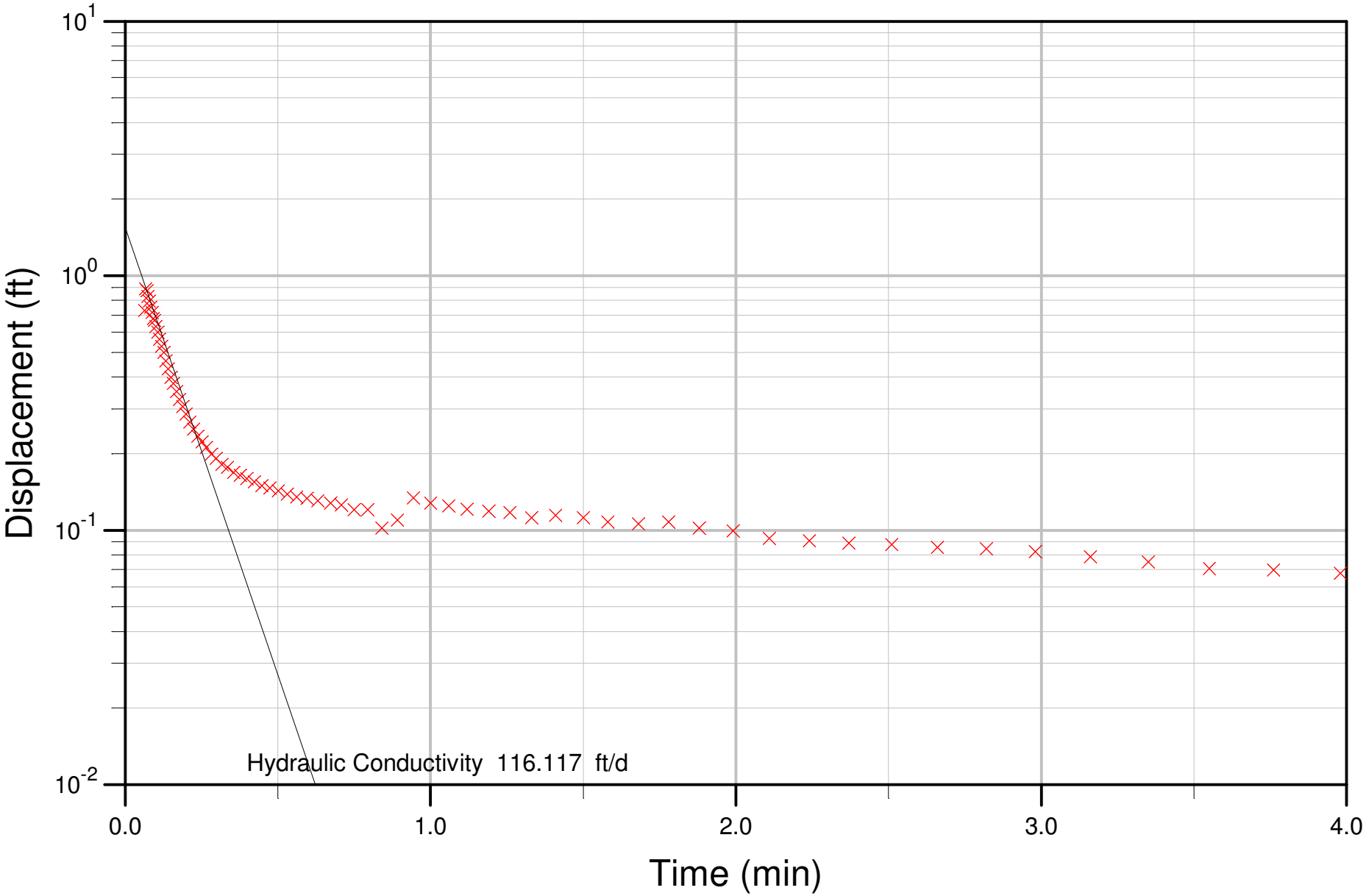


Figure 4-8: Slug Test/Hydraulic Conductivity Plot for AC-03, Test #2

USACE Assunpink Restoration Project

Trenton, New Jersey

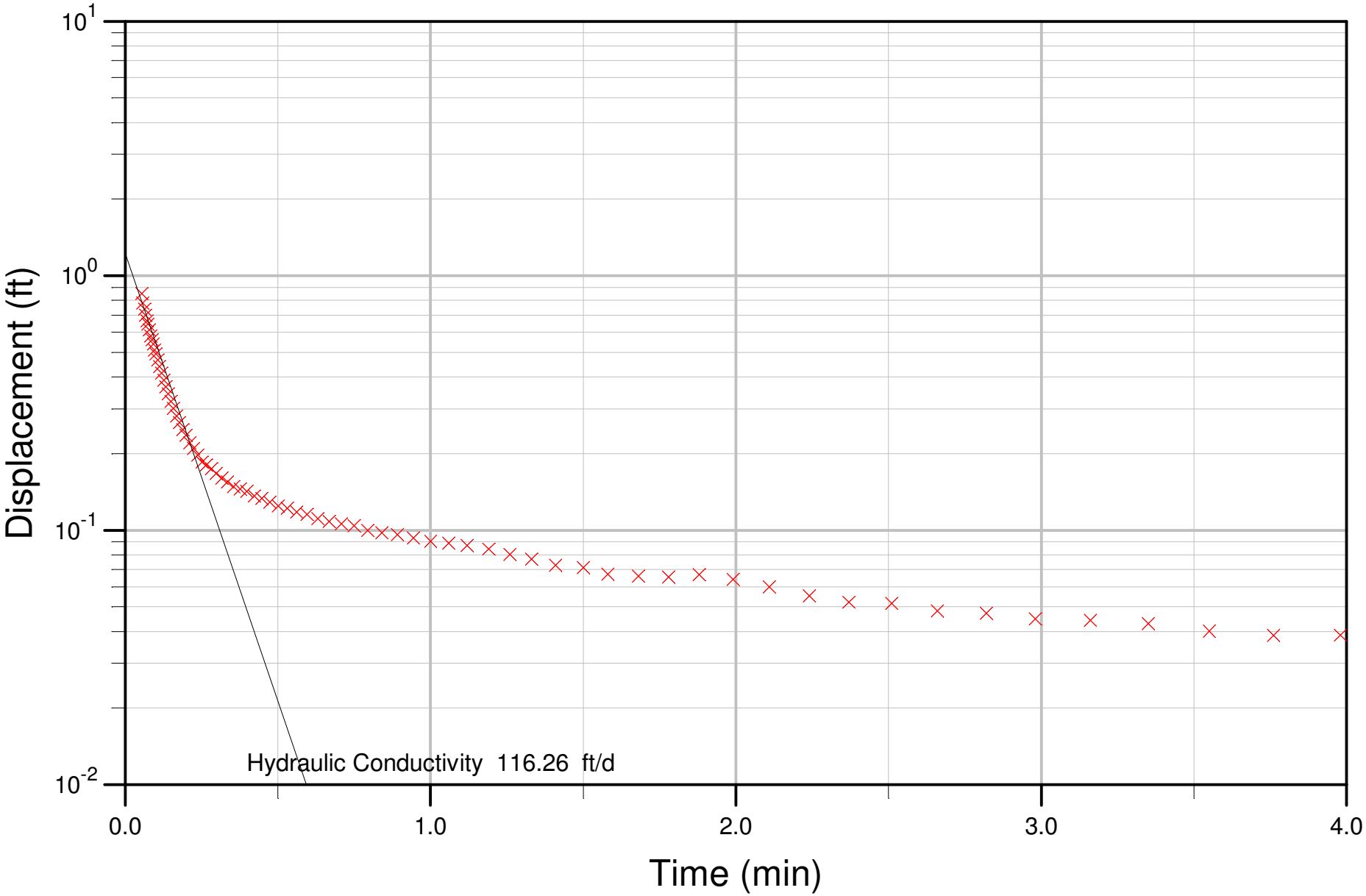


Figure 4-9: Slug Test/Hydraulic Conductivity Plot for AC-03, Test #3

USACE Assunpink Restoration Project

Trenton, New Jersey

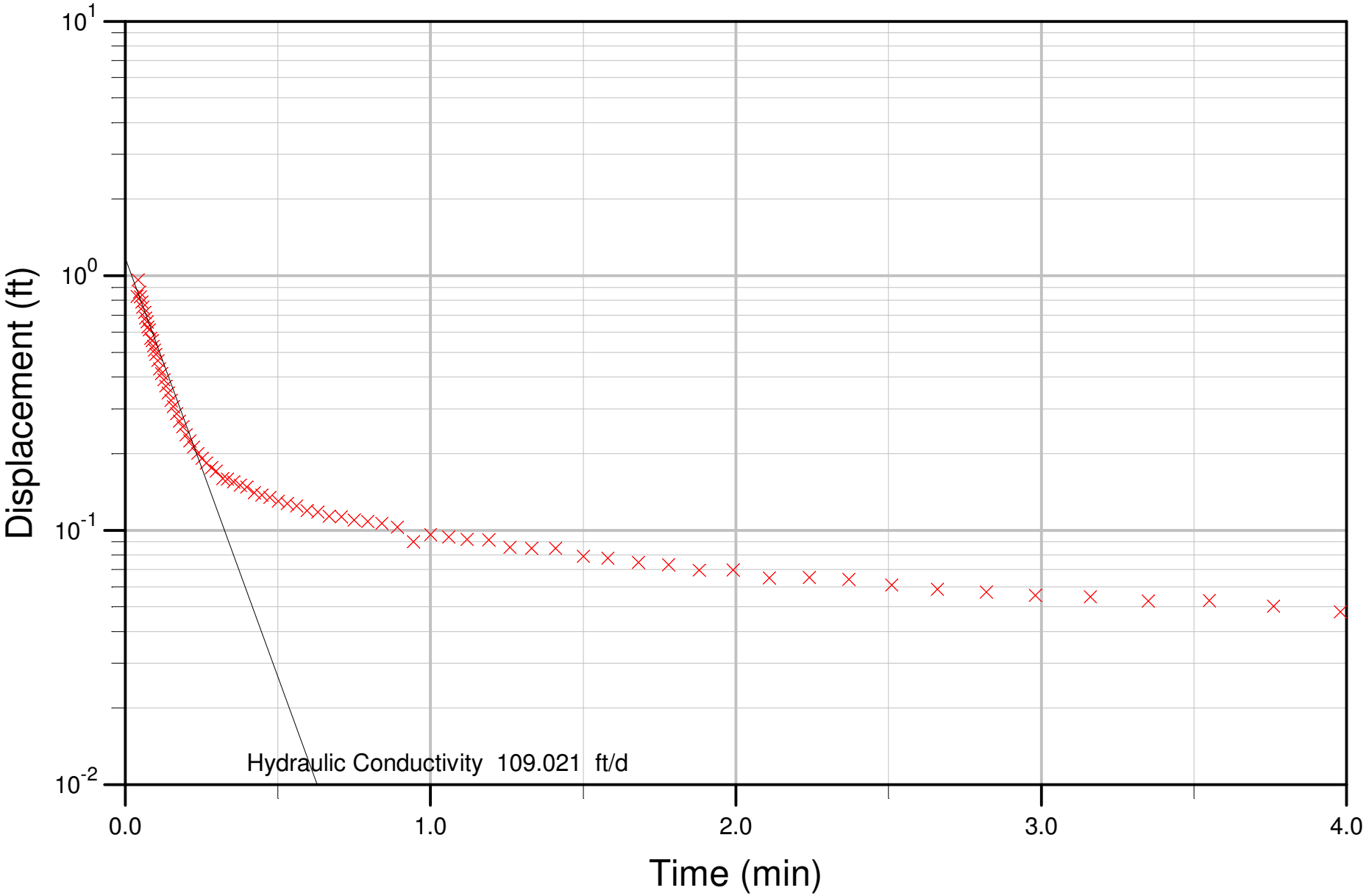


Figure 4-10: Slug Test/Hydraulic Conductivity Plot for AC-04, Test #1

USACE Assunpink Restoration Project

Trenton, New Jersey

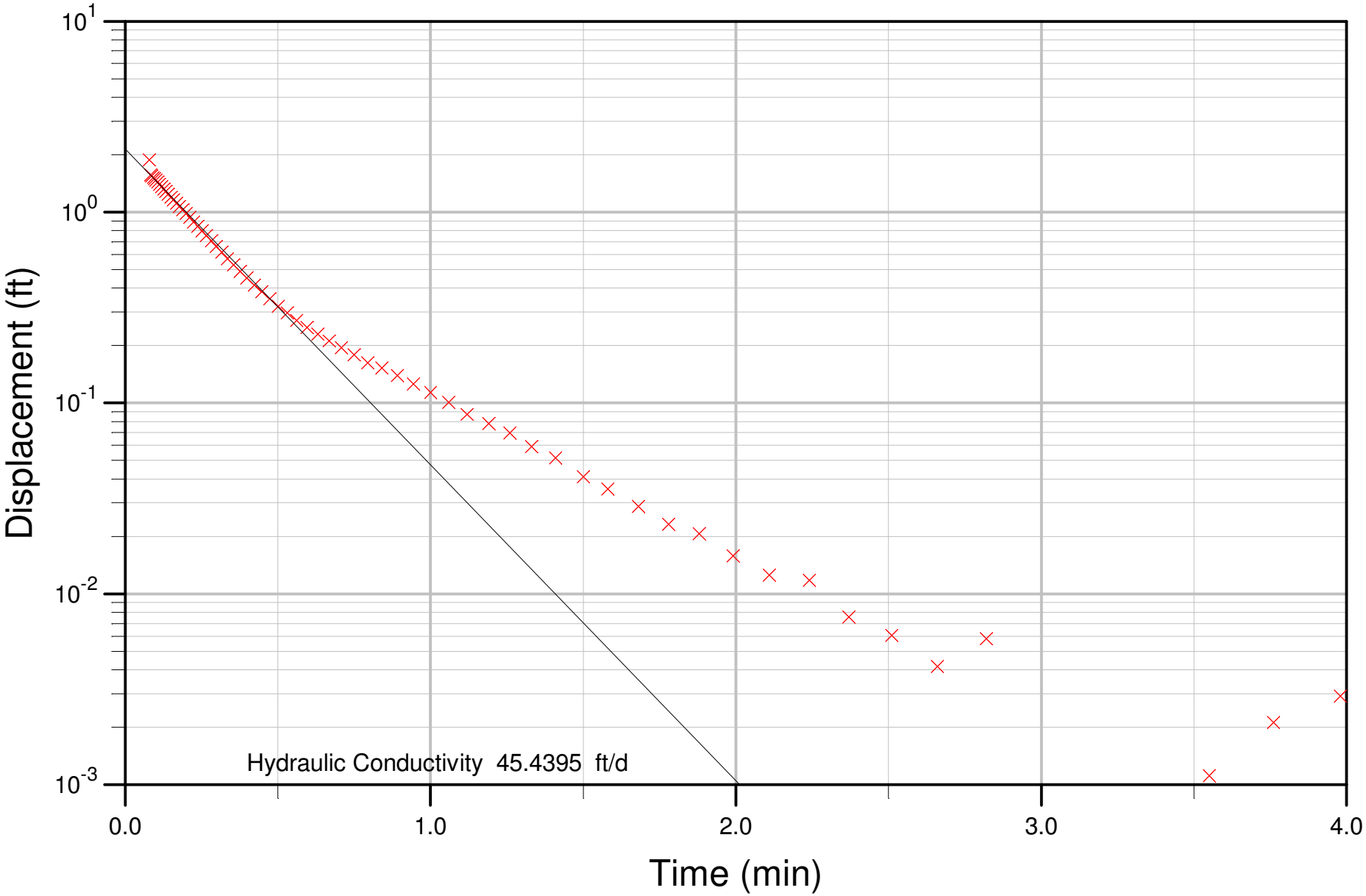


Figure 4-11: Slug Test/Hydraulic Conductivity Plot for AC-04, Test #2

USACE Assunpink Restoration Project

Trenton, New Jersey

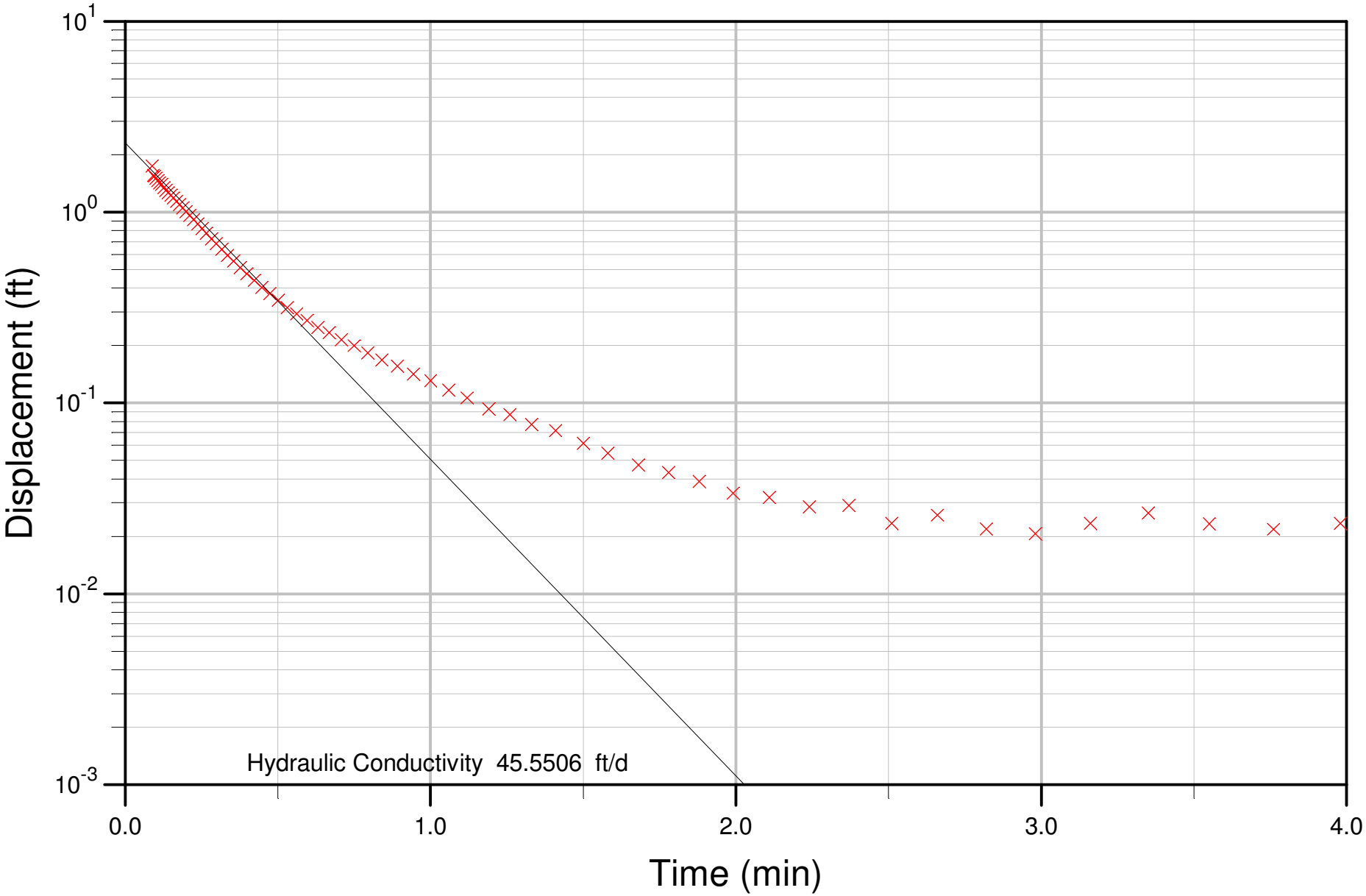


Figure 4-12: Slug Test/Hydraulic Conductivity Plot for AC-04, Test #3

USACE Assunpink Restoration Project

Trenton, New Jersey

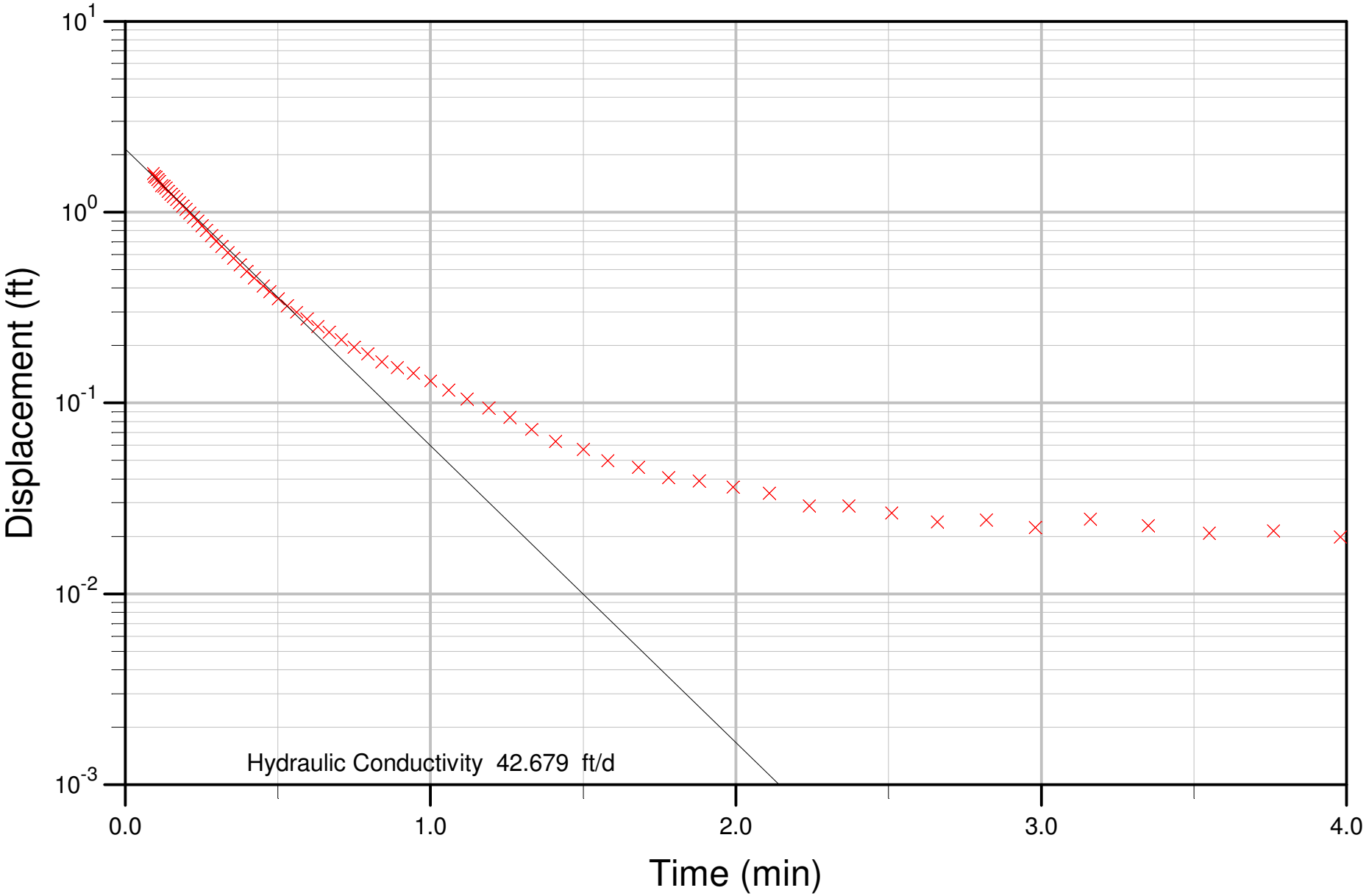


Figure 5-1: Groundwater Elevation vs. Surface Water and Weephole Elevations
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

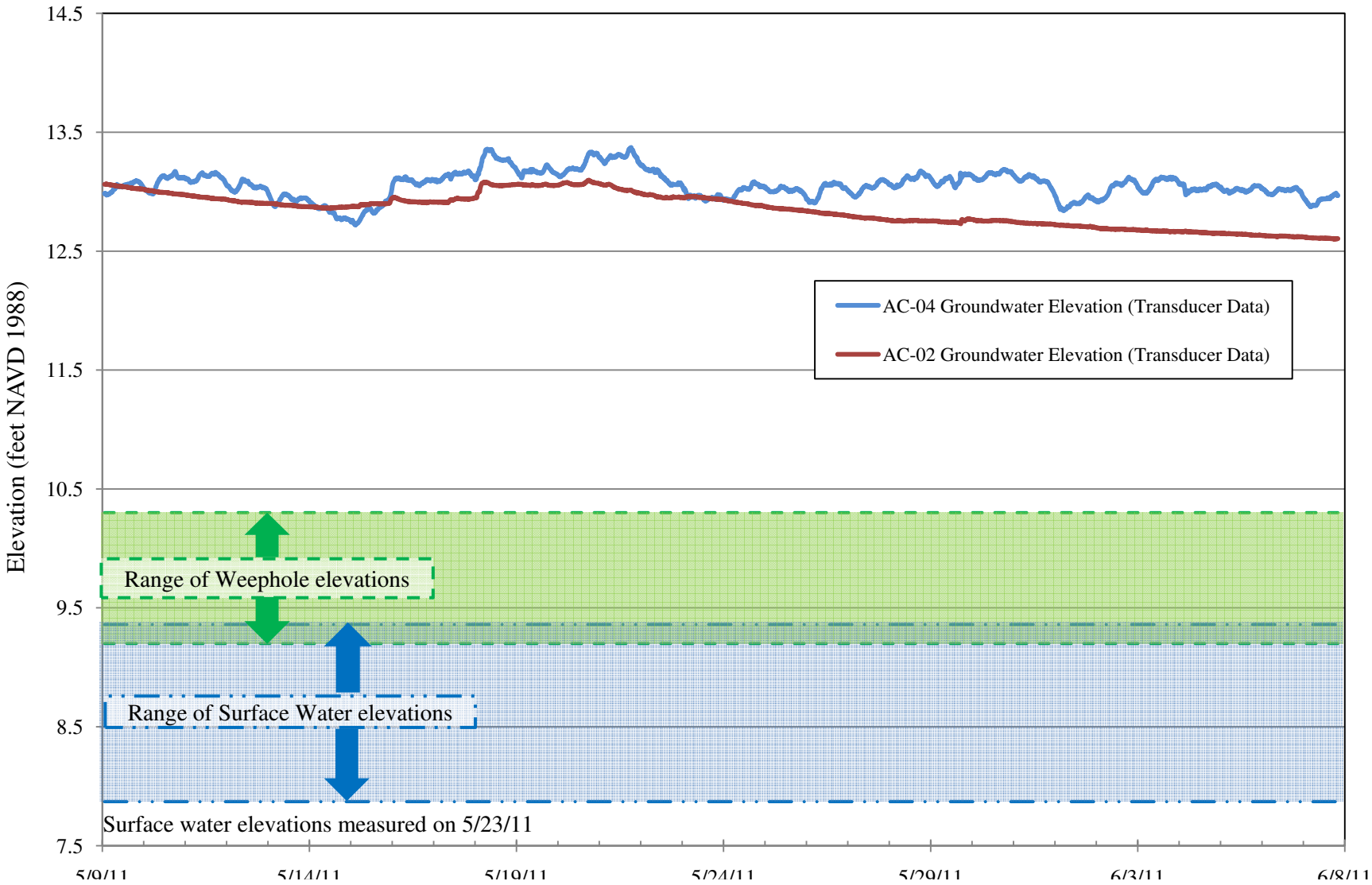


Figure 5-2: Groundwater Elevation and Precipitation Data
USACE Assunpink Creek Restoration Project
Trenton, New Jersey

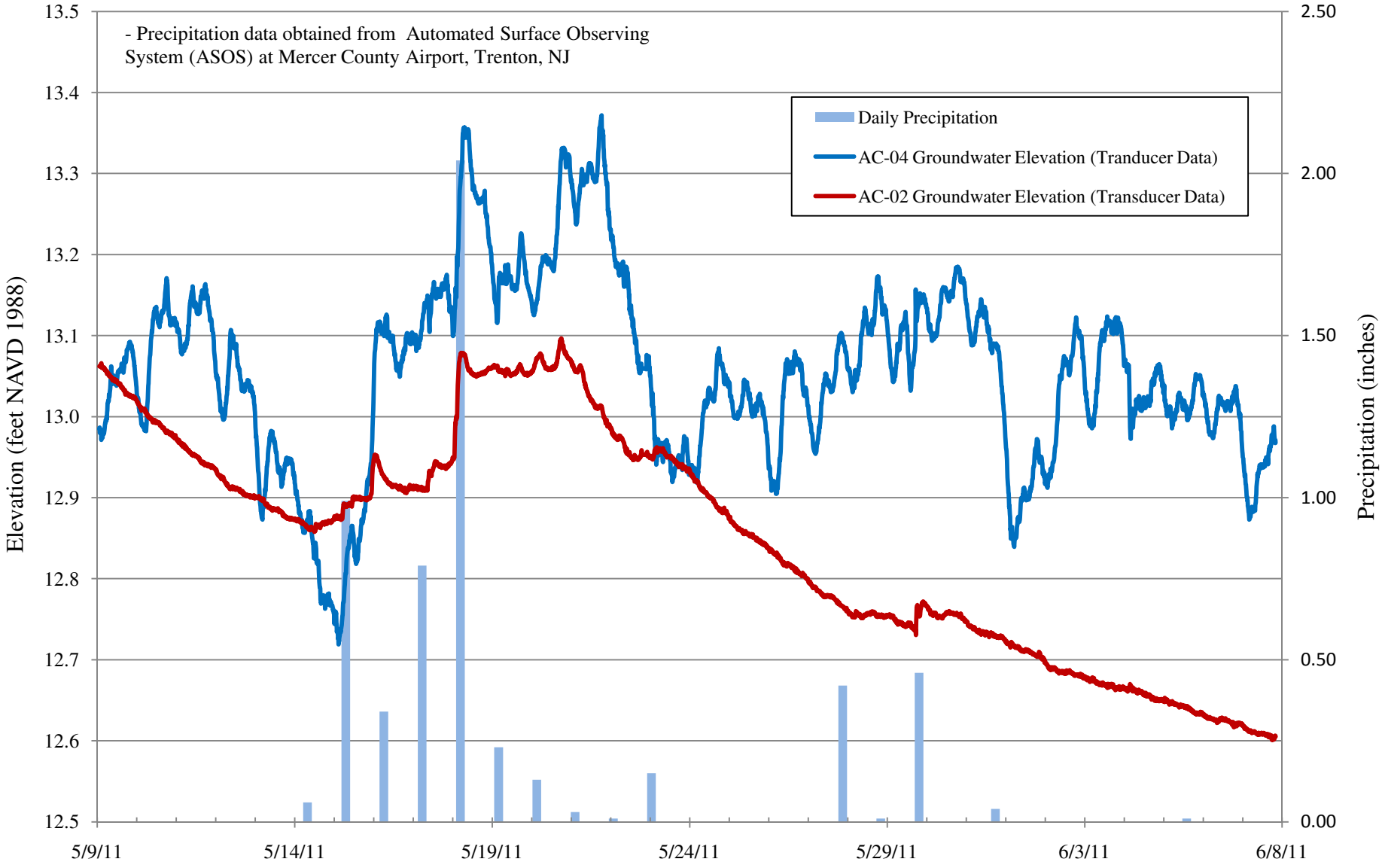
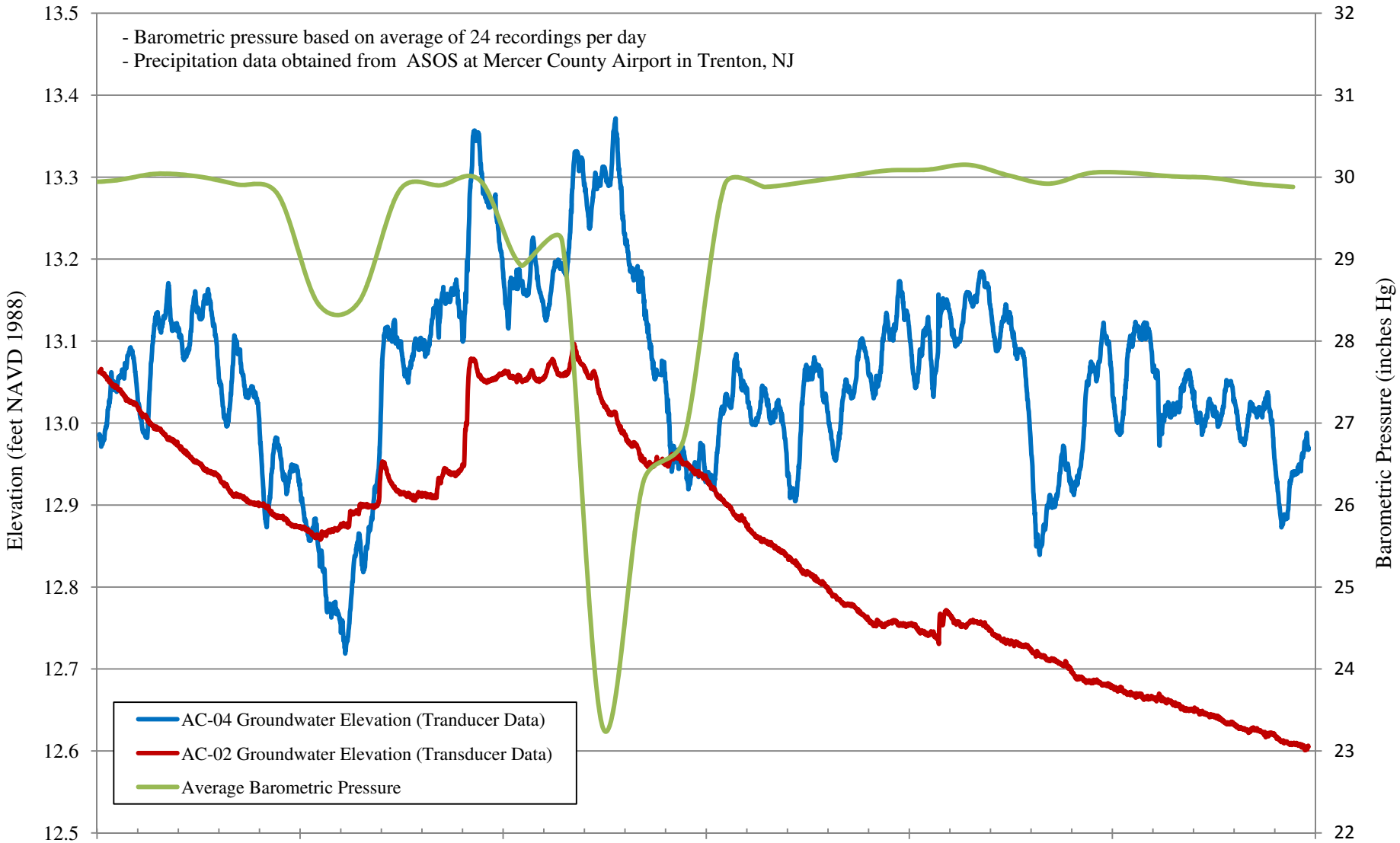


Figure 5-3: Groundwater Elevation and Average Barometric Pressure
USACE Assunpink Creek Restoration Project
Trenton, New Jersey



APPENDIX A-1

USACE Scope of Work - Task Order: 0010

Scope of Work

Architect Engineer Services
Monitor Well Installation and Sampling
Assunpink Creek, Trenton, New Jersey

Date: January 18, 2011
Revised Date: February 14, 2011

1.0 GENERAL:

1.1 Contract Number: W912BU-10-D-0001

1.2 Contract Action: Task Order: 0010

1.3Name and Location of Project: Well Installation and Sampling, Assunpink Creek, Trenton, NJ

1.4 Firm Name, Address:
O'Brien and Gere
Bentwood Campus
301 East Germantown Pike
East Norriton, PA 19401

1.5 Name of Sub-Contractors

Laboratory: Accutest Laboratories
Driller: TBD
Surveyor: TBD

1.6 Points of Contact:

A/E: Tom Nowlan
215-628-9100

USACE:
Mike Mohn (EC-EV)
215-656-6887

1.7 Project Overview:

The U.S. Army Corps of Engineers, Philadelphia District (USACE) is presently in the planning phase for the removal of an existing culvert and stream restoration along a section of the Assunpink Creek located in Trenton, NJ. As part of the District's needs, a follow up environmental investigation will be required at this site. O'Brien and Gere has already performed site work in a previous task order to support the efforts of USACE in this project.

The results of these site investigations will be added to existing background characterization information for USACE in the removal of the existing culvert and the design and construction of the new stream channel, as well as furthering the delineation of site soil and groundwater.

The project area for this investigation is a 500-foot section of the lower Assunpink Creek in downtown Trenton where the creek is contained within a buried box culvert known as the Broad Street Culvert. The investigation area is situated in an open grassy area adjacent to the State of New Jersey Department of Human Services (DHS) building and is bound by East Lafayette St. to the North, South Warren St. to the West, Assunpink Dr. to the South, and South Broad St. to the East. The City of Trenton is the owner of the site property.

Philadelphia USACE will require the services of an AE firm in order to provide support to this design project. The AE firm will perform the site investigations, which are detailed in this scope of work document.

This task order scope is divided into 2 parts (see Attachments A and B).

1.7.1 Monitor Well Installation

USACE Philadelphia District will require the contractor to install 4 groundwater monitor wells at the Assunpink Creek site. Details of the well installation work and other associated tasks to be performed are in Attachment A below.

1.7.2 Groundwater and Soil Sampling

This task order also includes groundwater and soil sampling and analysis to provide support for the Assunpink Creek site characterization and delineation work. Details of the sampling requirements are in Attachment B below.

2.0 SCOPE OF WORK

The work consists of preparing planning documents, and furnishing all plant, labor, materials, supplies, and accessories required to accomplish the investigations and associated laboratory testing, together with all other operations incidental to the work, in strict accordance with these specifications. The work may be performed on exposed soil, open grass, gravel or pavement covered areas, as well as in sediments. Draft and final deliverable products will be required in this task order. This task order includes four Options.

The Contractor shall provide qualified personnel to complete the following major work items as part of the base task order:

- Provide site project plans including work plan (WP), site health and safety plan (HASP), and Sampling and Analysis Plan (SAP)
- Install monitor wells at Assunpink Creek site

- Collect and analyze groundwater and soil samples
- Survey new monitor wells and other locations
- Install transducers in monitor wells and develop groundwater table elevation data for area
- Perform slug tests on monitor wells and determine hydraulic conductivity
- Produce draft and final project summary report

Option A includes:

- Setup on 2 additional well locations and 40 feet of extra drilling footage

Option B includes:

- Provide backhoe and operator to level off work area near well locations

Option C includes:

- Collect and analyze surface water samples from Assunpink Creek

Option D includes:

- Collect and analyze water samples from culvert weepholes

Details of the work to be performed under this Task Order can be found in the following sections:

- Monitor Well Installation – Attachment A
- Water and Soil Sampling and Analysis – Attachment B

3.0 DELIVERABLES

The contractor will be required to submit a draft and final project summary report, to include all of the tasks in this task order. See Attachment A for detail on this requirement.

4.0 COORDINATION AND EXECUTION OF WORK

The USACE Project Manager and point of contact for this Task Order will be Mike Mohn (215-656-6887). The contractor shall keep in close contact with the project manager who will be available for coordination with the document approvals, sampling activities, and laboratory analysis.

5.0 PROJECT SCHEDULE

This schedule is subject to adjustment by the Contracting Officer, in writing, for delays on the part of the Government, and for conditions beyond the control of the parties hereto. The Contractor shall adhere to the following schedule:

- Schedule site visit and scoping meeting within 5 calendar days of receipt of this SOW.
- Provide schedule of activities within 7 calendar days after notice to proceed (NTP)
- Provide draft WP, SAP, and HASP within 30 calendar days of NTP (allows 30 calendar days)
- USACE to review plans and provide comments within 37 calendar days of NTP (allows USACE 7 calendar days)
- Provide final approved WP, SAP and HASP within 44 calendar days of NTP (allows 7 calendar days)
- Install and develop monitor wells within 58 calendar days of NTP (allows 14 calendar days)
- Collect groundwater samples within 74 calendar days of NTP (allows 16 calendar days)
- Install transducers/perform slug tests within 76 calendar days of NTP (allows 2 calendar days)
- Collect groundwater elevation data from transducers/receive groundwater results within 106 calendar days of NTP (allows 30 calendar days)
- Provide draft project summary report within 136 calendar days of NTP (allows 30 calendar days)
- USACE to review draft summary report and provide comments within 143 calendar days of NTP (allows USACE 7 calendar days)
- Provide final approved project summary report within 150 calendar days of NTP (allows 7 calendar days)

In this task order USACE reserves the choice to modify the schedule by requiring the contractor to initiate the transducer work (obtain groundwater elevation data for 1-month period and perform slug test) within 2 days of well development completion. Using this modified schedule will result in the 1-month period of groundwater elevation data collection interrupted for 1-2 days while groundwater sampling is performed. This is not expected to negatively affect the set of groundwater elevation data, and is not expected to change the 150 calendar day period of performance.

6.0 PERIOD OF PERFORMANCE

The total period of performance for this task order shall be 150 calendar days from the notice to proceed. Note: for this task order, Notice to Proceed shall be defined as the date of the next work day following the date stamped on the contract document signed by the USACE contracting officer.

7.0 SITE VISIT

A visit to the site is required and is described in Attachment A.

8.0 COMPENSATION TO THE CONTRACTOR

In consideration of the performance of the work under this delivery order, the Contractor shall be paid **$ 118,440.00** for the work described herein (Base task order).

If exercised, in consideration of the performance of the work under this delivery order, the Contractor shall be paid $ 4,780.00 for the work described herein (Option A).

If exercised, in consideration of the performance of the work under this delivery order, the Contractor shall be paid $ 2,220.00 for the work described herein (Option B).

If exercised, in consideration of the performance of the work under this delivery order, the Contractor shall be paid $ 2,350.00 for the work described herein (Option C).

If exercised, in consideration of the performance of the work under this delivery order, the Contractor shall be paid $ 2,210.00 for the work described herein (Option D).

This shall constitute complete payment for all services required and expenses incurred in the performance of the work.

Note: Contractor costs for Options A-D shall be submitted using unit costs in order to allow portions of each option to be exercised.

2/14/2011

Thomas Nowlan — Date
Contractor's Representative

M. Mohn 2/24/11

Michael F. Mohn — Date
A/E Manager

2/19/11

Paul D. Bacani — Date
A/E Contract Negotiator

Attachment A
Scope of Work
Architect Engineer Services
Monitor Well Installation
Assunpink Creek, Trenton, New Jersey
1/18/11

1.0 GENERAL INFORMATION:

The U.S. Army Corps of Engineers, Philadelphia District (USACE) is presently in the planning phase for the removal of an existing culvert and stream restoration along a section of the Assunpink Creek located in Trenton, NJ. As part of the District's needs, additional geo-environmental investigation of the site area will be required in order to characterize groundwater. The results of these site investigations will be used as background characterization information for the USACE in the removal of the existing culvert and the design and construction of the new stream channel. The A/E firm is required to perform all work in accordance with procedures and schedules approved by the Government.

2.0 DETAILED SCOPE:

2.1 Site Visit and Scoping Meeting

In order to gain an understanding of the Assunpink Creek site it is required that the contractor make plans for a site visit in order to see site features, topography, vehicle access, etc. Please coordinate with Mike Mohn (215-656-6887) to arrange a site visit. The site visit shall serve as a scoping meeting for the project. The site visit shall be scheduled within approximately 5 calendar days of the receipt of this SOW.

2.2 Preparation of a Work Plan, Health and Safety Plan, and Uniform Federal Policy Quality Assurance Project Plan

2.2.1 Work Plan

The contractor shall provide a work plan (WP), which shall include all work planning and on-site work that will be required to complete this task order. The WP will contain descriptions of the work to be performed on-site for each work item in this task order. Vendor literature, specification sheets, and instructions/operating procedures for all tasks will be included in the WP for all supplies and equipment that is procured and used in this task order. A description of how the work will be performed will be included, including sequence of events and project schedule. The WP will also include a description of quality assurance monitoring during well installation, slug testing, and sampling and analysis, as well as any other quality assurance issues such as how

corrective action will be taken if required. The WP will have descriptions of materials and equipment to be used.

The Contractor shall identify all field personnel by name who shall be present during all site work performed by either the Contractor or any subcontractor personnel. Any substitutions for this individual must be approved by USACE in writing. A field supervisor shall also be identified by name. This individual's responsibilities will include acting as supervisor for Contractor and subcontractor personnel, coordinating all field activities needed to perform the task order, acting as H&S specialist in the absence of any other designated H&S personnel, and acting as a contact for USACE. Key Contractor personnel, including key field supervisory personnel, will also be listed along with their responsibilities, as well as any subcontractors and subcontractor key supervisory field personnel and representatives. The WP will also include methods of performing, documenting, and ensuring quality control operations of the contractor and all subcontractors. The final WP will be approved by USACE prior to any field activities.

2.2.2 Site Health and Safety Plan

The contractor shall provide a site-specific health and safety plan (HASP). The HASP will be prepared in accordance with USACE publication EM 385-1-1 to cover all on-site work under this task order. The HASP will include emergency contact information, hospital directions, and health and safety requirements based on site-specific conditions. The final HASP will be approved by USACE prior to any field activities.

The HASP shall also identify onsite personnel who shall ensure that all contractor and subcontractor personnel perform all work in accordance with the site HASP. A minimum of one person with this responsibility shall be onsite at all times that field work is ongoing, by either the contractor or any subcontractors.

The Contractor shall assume that level D protection, with basic work clothes, steel toe boots, hard hat, and gloves shall be utilized while drilling and sampling activities are occurring.

2.2.3 Sampling and Analysis Plan

The Sampling and Analysis Plan (SAP) is discussed in Attachment B.

2.2.4 Submission of WP, HASP, and SAP

The contractor shall submit 2 bound copies and one complete PDF (with tables, graphs, and attachments, if applicable) of the draft WP, HASP, and SAP to the USACE for review within 30 calendar days of the issuance of the notice to proceed. USACE will review the documents and provide comments to the Contractor within 7 days of receipt of the documents. The final versions of the documents shall be submitted within 7 days of

receipt of comments from USACE. The contractor shall submit the final WP, HASP, and SAP to USACE, with all review comments addressed.

Note: for this task order, Notice to Proceed is defined as the date of the next work day following the date stamped on the contract document signed by the USACE contracting officer. Use of this definition will allow sufficient time for the contractor to receive the signed contract document (normally sent via overnight delivery immediately after signing) and ensure that there is no misunderstanding of the notice to proceed dating. No field work will begin until all project plans are approved by USACE.

For each of these final documents, 3 bound copies, one unbound copy, a CD ROM pdf of the complete document (including tables, graphs, appendices and attachments), and all electronic files (Word/Excel files, tables, graphs, ACAD figures, etc) will be submitted to USACE.

2.3 Installation of Groundwater Monitoring Wells

2.3.1 Well Installation

The Contractor shall obtain the services of a licensed New Jersey well driller to install four new groundwater monitoring wells at the Assunpink Creek site. The contractor shall have a geologist or hydrogeologist on site at all times to supervise all borehole and well installation activities. This person shall have a minimum of 5 years of direct field experience in well drilling applications. All work associated with the pilot boring and monitor well installation shall be done in accordance with USACE and NJDEP regulations and guidance. The contractor shall contact New Jersey One Call (800-272-1000) to have utilities at the site marked out prior to any intrusive work.

Based on test pit logs (provided as part of this task order separately), site overburden soils appear to consist of fill material. USACE expects that the wells will be placed and screened in this fill which is primarily silty sands and gravels, with some rock fill. Included in this material are bricks, concrete, stone blocks, rebar, boulders, cinder blocks, wood debris, etc. of various sizes. USACE recommends that the contractor review these logs in order to get an idea of the site conditions that are likely to be encountered and to determine the optimum drilling method for this application.

It should be noted that, due to the relatively small size of the project site and its urban setting, there will be several constraints imposed on the well location and installation task, including:

- Presence of utilities or other subsurface features
- Presence of security fences, street guard railings, and other above ground features
- Wells should not be located within footprint of test pit locations
- Relatively limited flat area amenable to placing a drill rig

- Requirement that no heavy equipment, vehicles or heavy machinery shall be allowed to go onto the culvert top or cross the culvert

All proposed monitor well locations will be marked at the project site by USACE. The approximate locations of the proposed wells are shown in Figure 1. The Contractor shall coordinate the final location with Mike Mohn, of the Philadelphia District to ensure agreement by the Government.

Prior to the well installation operations, a monitoring well permit application shall be submitted by the contractor to the New Jersey Department of Environmental Protection (NJDEP) Division of Water Allocation and a Well Permit obtained for the proposed well installations. Upon completion of the well installation operations, the well record and associated required documentation shall be submitted to USACE and NJDEP by the contractor.

The USACE Point of Contact should be notified at least 5 days prior to the commencement of the well installation operations. The well installation schedule will need to be approved by USACE to avoid schedule conflicts with several other USACE projects that are active at this time of year.

The Contractor shall drill a pilot borehole at the proposed well location. The purpose of the pilot borehole is to establish stratigraphy and locate the desired aquifer and screening interval. The pilot borehole shall be drilled and sampled continuously from the surface level for each well. The contractor shall select either mud rotary, hollow stem auger, or other drilling technique to be used at each of the proposed well locations. If hollow stem augers are utilized a plug or some other device shall be used to prevent a soil plug at the cutting head of the augers. The pilot boring can be utilized for the well installation. The Contractor shall ensure that the drill rig and method selected for this work will have sufficient power and capability to drill boreholes and install monitor wells in site soils having the characteristics and materials noted in the test pit logs provided.

Continuous split spoon sampling shall be performed while placing the boring. Soil sampling shall be performed using either the Standard Penetration Test method or down-hole hammer. The soil borings shall be screened with a PID meter and logged by a geologist with a minimum of 5 years of direct field drilling experience. The soil samples will be used to verify the stratigraphy and well screen locations. The boreholes for the wells shall be placed in accordance with NJDEP regulations in order to accommodate 4-inch diameter wells. A 5-foot or 10-foot long well screen shall be installed at the selected aquifer level, whichever is appropriate, after consultation with USACE representatives. Potable water shall be supplied by the contractor and used in the construction and development of the wells.

USACE expects that each of the four monitor wells will have a depth no greater than approximately 20 feet bgs since bedrock was encountered in some of the test pits at depths up to approximately 14 feet bgs. The depth of each monitor well will not exceed

the depth to bedrock at any well installment location. The final depth of the well and screened interval will be determined in the field based upon the information obtained in the field from the pilot borehole. The contractor shall have on hand or readily available, a selection of commonly used filter pack materials and screen slot sizes that are compatible with the naturally occurring aquifer stratigraphy.

The screened interval will be determined in the field by the Contractor and approved by USACE personnel who will be on-site or available by phone. At least one of the new monitor well locations will likely be in an area where floating product sheen was observed or PID hits/odor was registered recently during test pit operations. This product is assumed at this point in time to be hydrocarbon-based Light Non-aqueous Phase Liquid (LNAPL). At any locations where LNAPL is present, the screened interval of the monitor well will straddle the water table.

The typical well construction detail is shown on Figure 2.

2.3.2 Disposition of Samples

Split-spoon samples shall be placed in 1-pint wide mouth plastic or glass jars to be provided by the Contractor. They shall be sealed and shipped in corrugated cardboard boxes that have the capacity to hold no more than 12 sample jars and the strength to contain and protect the jars and their contents under ordinary shipping and handling conditions. Each jar sample shall have a printed or type - written fade resistant and waterproof label affixed to the outside of the jar and shall contain the following information:

a. Project
b. Hole No.
c. Sample No.
d. Sample Date
e. Depth of Sample
f. Blow Counts

Each box of jar samples shall be marked with a permanent black marking pen indicating the following:

a. Project
b. Sample Date
c. Jars samples from Hole No.
d. Box No. and No. of Total Boxes

Jar samples shall be delivered to the Fort Mifflin Project Engineers Office, Philadelphia, PA, upon completion of the project.

2.3.3 Records

The Contractor shall keep accurate boring and well logs (DRILLING LOG ENG FORM 1836 and 1836-A, or approved equal) and record of all work accomplished for this installation. All such records shall be recorded during the actual performance of the work and shall be preserved in good condition by the Contractor until they are delivered and accepted. The following information shall be included on the log or in the record for the installation:

a. Hole number or designation and elevation of the top of hole with datum reference.

b. Driller's name and Inspector's name.

c. Make, size and manufacturer's model designation of drilling and sampling equipment.

d. Type of drilling and sampling operation by depth.

e. Hole diameter.

f. Dates and time by depths when drilling and sampling operations were performed.

g. Drill action, rotation speed, hydraulic pressure, water pressure, and any unusual and non-ordinary experience, which could indicate the subsurface conditions and changes encountered.

h. Depths at which samples were recovered or attempted.

i. Classification or description by depths of the materials sampled or penetrated using the Unified Soil Classification System (ASTM D 2487). Descriptive information for soils shall be in accordance with ASTM D 2488 and shall at least include the following: moisture conditions, consistency, degree of compactness or stiffness, color, primary constituent and gradation (e.g. SILT, CLAY, fine to medium SAND, etc.) secondary constituents, and odor (as applicable). This classification shall be made immediately after each sample is retrieved. Note: the contractor shall have these documents on hand during the field work.

j. Indication of penetration resistance such as SPT or drive-hammer blows per 6 inches for driving samples.

k. Weight of drive-hammer.

l. Percentage of sample recovered.

m. Depth at which groundwater is encountered initial and when stabilized.

n. Depth at which drilling fluid is lost and regained.

o. Depth at which the color of the drilling fluid return changes.

p. Type and weight of drilling fluid.

q. Depth of bottom of hole.

r. Well construction log showing as-built wells.

s. Estimated quantity of water withdrawn to complete well development.

t. Well Permit, Well Records, NJDEP Well Forms "A" and "B".

2.3.4 Well Construction Materials

The monitor wells shall be constructed in accordance with NJDEP and USACE guidance. The casing and well screen for the monitor wells shall be 4-inch diameter schedule 40 PVC material with threaded couplings. One of the new monitoring wells (AC-1) shall be flush mounted with the surrounding ground surface, while the remaining three monitoring wells (AC-2, AC-3, and AC-4) shall be standard stickup type wells.

The well shall be installed in general accordance with the specifications shown on the enclosed typical monitoring well installation detail. Based on review of samples collected from the borehole, the contractor shall determine, with USACE approval, the optimum well slot size and sand filter pack size and gradation. These items shall be determined prior to well installation. The contractor shall have on hand or readily available different sizes/grades of sand for well construction. The secondary filter pack, just above the primary filter pack, is required and shall consist of #00 filter sand. No glues or adhesives shall be used in constructing any wells in this task order. All sand, grout, and other materials that must be used during the construction of any wells in this task order will be added via tremie pipe. A tape measure shall be used by the geologist to verify and document the final dimensions (top and bottom) and thickness of all sand, grout, and other materials added during the construction of the well. The contractor geologist shall also verify, using a tape measure, the depth of the bottom of the borehole and the bottom of the well after it is installed.

2.3.5 Cuttings and Drilling Fluids

Drill cuttings/mud shall be containerized and labeled pending the results of testing. The storage containers selected shall have a secure closed top, which will protect against precipitation and contact with humans or animals. If the test results from this material are

below regulatory levels, the material shall be placed on the site grounds. Following cuttings disposal, the empty containers shall be removed from the site.

Decontamination and development water shall be containerized and labeled pending the results of testing. If the results from the water are below regulatory levels, the water shall be placed on the site grounds. Following disposal at the site, the empty containers shall be removed from the site.

If the cuttings/mud or the water results indicate substantial contamination, the task order may be modified at that point to address disposal requirements.

No cuttings/muds, or decontamination or development water shall be placed in any drainage ditches, swales, or in Assunpink Creek.

Since it is likely that no significant contamination will be encountered, any trash generated at the site will be removed by the contractor for placement in "clean" trash receptacles.

2.3.6 Development

The development should be conducted in accordance with ASTM D 5521-94 Standard Guide for Development of Ground-Water Monitoring Wells in Granular Aquifers. This shall be accomplished by methods approved by the Contracting Officer's Representative, however the use of a surge block is the preferred method. The well development shall be conducted until the groundwater obtained from the well has a sufficiently low turbidity (less than 40 nephelometric turbidity units [NTU]) for groundwater sampling using the low-flow procedure, or until a maximum of 4 hours of total redevelopment pumping time has been incurred. The minimum time of development shall be two hours of continuous surging. The turbidimeter used for this shall be calibrated properly each day that it is used. The USACE POC shall be notified immediately if any well does not attain the required turbidity level. The USACE POC shall also be notified immediately if any well does not provide sufficient amounts of water to be developed, or is "dry". The Contractor shall complete a record of the well development operations conducted at each well location and present the results on the Well Development Log included as Figure 3. The contractor shall wait 14 days after development of each well before performing groundwater sampling.

2.3.7 Groundwater Depth Determination

The Contractor shall determine the depth to groundwater for each of the wells during drilling activities and after full well development and stabilized recovery. The measurements shall be recorded to the nearest hundredth of a foot. The Contractor shall also document the time and date of the stabilized groundwater measurements. The elevation of the groundwater level for the wells shall also be determined. Since free

product may be encountered in at least one location, the contractor shall provide an interface probe to obtain water level (and free product level if applicable) measurements.

2.4 Survey Work

The new wells shall be surveyed to determine their horizontal location and vertical elevation. The survey shall be performed in NJ State Plane Coordinate System NAD83, New Jersey (US Survey feet) and NAVD 88 (US Survey feet). The survey must be supervised by a NJ-Licensed Surveyor, who shall also prepare Well Form "B" for the new well location documentation. The Contractor shall determine the horizontal location to the nearest 0.1 foot. The elevation measurements shall be recorded to the nearest 0.01 foot vertically. Three elevation points shall be recorded for each well; top of inner casing, top of outer casing and vicinity ground surface. The well location shall be plotted in AutoCAD on a digital USGS Quadrangle Map or approved equal.

The contractor shall also survey the locations and elevations of the endmost weepholes placed in the existing vertical culvert walls at both its upstream and downstream openings. This shall be done on both sides of the culvert, for a total of 4 weepholes to be surveyed.

The contractor shall also place permanent marks (i.e. PK nail, etc,) in the culvert wall at both the upstream and downstream ends of the culvert, and these marks shall be surveyed. These marks shall be used as a reference point to measure the elevation of the surface water in the creek.

The weepholes and marks placed in the culvert shall be surveyed using the same standards and accuracies as described above for the wells.

2.5 Collection of Groundwater and Surface Water Elevation Data

The contractor shall install data logging transducers in 2 of the 4 new monitor wells. USACE will notify the contractor which 2 wells will be selected. The transducers will be used to collect groundwater elevation data over a period of 1 month in order to obtain a reliable range of groundwater elevation data, i.e., maximum and minimum groundwater elevations. This data set should assist in identifying a likely hydrocarbon smear zone elevation range, if present, in the subsurface soil. The transducers will be calibrated to known elevation standards at the site so that accurate groundwater elevations can be determined, for the duration of the entire data collection period. If for some reason the transducers in the wells are removed or disturbed due to sampling or other activity, the contractor shall ensure that they are at the proper depth when they are replaced in the well. Due to the urban setting, the contractor should provide equipment that can be hidden inside well casings, etc, so as not to be visible to people in the area.

2.6 Slug Testing

Slug tests will be performed on the four new monitor wells installed at the Assunpink Creek site. The goal of the slug testing is to estimate aquifer parameters at various areas across the site. Antecedent water level monitoring will not be required for the slug testing. Electronic pressure transducers will be placed in selected wells on site to monitor the effects of the slug testing at each location. Since the wells will be installed a substantial distance away from each other, it is not known whether water level changes in the wells will impact each other.

Recovery data will be collected until a minimum of 90% recovery has been observed unless the USACE agrees to terminate the test earlier. Overall, it is estimated that a maximum of 2 days will be needed to complete this portion of the field work.

The contractor shall supply all equipment needed to perform the slug test, and ensure that a geologist experienced in conducting slug tests is present on site for each work day. In addition, field personnel must be experienced in the operation of the selected pressure transducers and data loggers. It is likely that the wells will be relatively shallow (less than 20 feet deep). The geologist will also maintain a daily field log documenting the activities completed, any problems encountered, solutions derived to overcome these problems, and an electronic log of all water level data collected.

The contractor will also obtain precipitation data collected from a local source, and will record barometric pressure changes during testing. These data will be used to adjust and correct the water level changes recorded during the testing.

The contractor shall analyze and interpret the hydraulic data from each of the tests and summarize the results. Time-drawdown data collected from the slug tests shall be analyzed using AQTESOLV, Aquifer Win-32, or a similar software package to determine the hydraulic conductivity of the portions of the aquifers tested. In addition to determining the aquifer characteristics, hydrographs of the drawdown and recovery at individual wells over time should be prepared as part of the analysis. Data should be analyzed for both electronic and manual water level measurements. The water table elevation data shall be compared to the elevation of the weepholes and creek water, in order to determine whether there is potential contact between the groundwater and the creek water.

The results of the slug tests shall be incorporated into the final project summary report. The report shall include a narrative summary of field activities, field notes, photographs of the field activities, summary tables of water level data (drawdown, recovery, and actual elevations) from each test, match curves depicting the time-drawdown data from wells each test, summary tables showing the ranges of aquifer parameters calculated for each test, and any conclusions and recommendations that can be made within the constraints of the work. Maps and figures shall be in AutoCAD 2007 format. An additional digital final copy of the report (all text, tables, figures, photos) shall be submitted as a single Adobe *.pdf file.

2.7 Option A

Option A consists of up to 2 additional drill rig setups at different monitor well installation locations and up to 40 additional feet of extra drilling footage. The contractor shall provide unit costs for the individual rig setups as well as for the extra drilling footage since it is not known at this time whether/or to what extent each component of this option shall need to be exercised.

2.8 Option B

Option B will require the contractor to provide a backhoe and operator in order to level off the area in the immediate vicinity of one or more of the monitor well locations, as needed, since a large percentage of the site surface area is sloped. USACE expects that if this option is exercised, the machine and operator would only be needed for 1 day.

2.9 Site Access

Access to the site, will be provided by the Government. The Government shall obtain all real estate access if needed.

3.0 DELIVERABLES

The Contractor shall prepare a project summary report detailing all of the field operations and work completed as part of this task order. This project summary report will include all tasks within this task order. The well installation section of the report shall include the location of monitoring well, boring log, well construction log, well permit and well record, groundwater head, site geology, analytical results, and other relevant information. A site figure with a groundwater contour will be included in the report. All well survey, elevation and depth information should be summarized in a table format. The geologic information shall delineate the geologic formations penetrated by the wells and identify any other overlying formations encountered. The report will also include the analytical results for water and soil, summary tables including comparison to appropriate regulatory criteria, and discussion of the results. For the 4 groundwater samples, a summary of total toxic organics (TTO) shall be included, which sums up the concentrations of each of the components of this grouping. Another summary table shall be included, which contains the concentrations of each of the constituents in the table in Section 15-11.1d, Local Limits Development, in the Permit Procedure for Acceptance of Remediated Groundwater, City of Trenton document (provided separately to the contractor). The groundwater level and slug test data shall also be included in the report along with a discussion and interpretation of the results. The laboratory analytical data and other field data shall be included in an appendix.

The report will be prepared in Microsoft Word. Figures shall be prepared in AutoCAD and tables shall be prepared in Microsoft Excel. The date of the report and contract and

task order numbers shall also be included on the cover of the report. All CD-ROM's shall be professionally labeled on both the container and disk with the aforementioned information. All PDF reports shall have hot linked table of contents, tables and figures.

Figures of the site shall be submitted using AutoCAD with digital aerial photographs from a commercial source to indicated well locations. Maps and figures should be a maximum of 11"x17". The figures for the draft report may be reproduced in black and white, however the final reports shall be in color.

The A/E Firm shall submit to USACE a draft report. Three bound copies, one unbound copy, and a full PDF version of the draft report will be submitted.

The final report, containing the addressed comments, shall be submitted to the USACE in both hard and digital copy. The final deliverable provided by the A/E firm to USACE must consist of the following:

- CD-ROM containing PDF file (i.e., electronic hard copy) of the entire report including all tables, figures, and appendices.
- Hard copy (8 bound, 1 unbound) of the entire report.
- CD-ROM containing electronic files (Word, Excel, etc) containing all files of text, tables, figures, and other materials used to generate the report.
- CD-ROM containing complete analytical laboratory report in pdf format.

Complete analytical laboratory reports shall be submitted in pdf format.

The recommended content and format of the summary report deliverable prepared by the A/E firm should follow be structured as follows:

(1) TITLE PAGE - bearing the appropriate title, date, author, and contract number.
(2) EXECUTIVE SUMMARY - a brief description of the study's purpose, findings, and conclusions.
(3) TABLE OF CONTENTS - including a list of all figures and tables presented in the report.
(4) INTRODUCTION - stating the purpose of the study with background information on the project and area.
(5) METHODOLOGY – describes all field work and procedures related to the performance of each task in this scope of work; describes the sampling and analysis equipment and methodologies used in the field and laboratory.
(6) RESULTS - presents the collected data in tabular form (hard and electronic copy). The resulting aqueous data shall be summarized in a table containing detected compounds. A map illustrating the project area, locations of any surveyed site features, and sample locations by identification number shall be included. In addition, the Contractor shall include a table and map identifying sampling locations, geographic coordinates of any surveyed locations, and corresponding data collection results.
(7) CONCLUSIONS – includes major conclusions resulting from the project findings.

(8) A LIST OF REFERENCES - includes literature cited and agencies or individuals consulted. The bibliography must be in a format used by professional scientific journals.

(9) APPENDICES – will contain a copy of this scope of work, raw data sheets, record logs, field notes, analytical laboratory results, and other pertinent information. Analytical results must also be included (see laboratory deliverable requirements in Section 2.3.8).

4.0 LIST OF ATTACHMENTS:

The following will be supplied to the contractor separately:

- Test pit logs
- Figure showing monitor well locations
- Permit Procedure for Acceptance of Remediated Groundwater, Trenton Sewer Utility

Attachment B
Scope of Work
Architect Engineer Services
Groundwater and Soil Sampling
Assunpink Creek, Trenton, New Jersey
1/18/11

1.0 GENERAL INFORMATION:

The Scope of Work (SOW) for this program will include the following tasks:

- Update Sampling and Analysis Plan
- Collect and analyze soil and groundwater samples (one event)
- Generate project summary report

Option C includes:

- Collect and analyze surface water samples from Assunpink Creek

Option D includes:

- Collect and analyze water samples from culvert weepholes

The purpose of this program is to characterize water samples collected from the Assunpink Creek site.

2.0 DETAILED SCOPE:

2.1 Site Visit and Scoping Meeting.

A site visit is discussed in Attachment A.

2.2 Plans

2.2.1 Sampling and Analysis Plan

The contractor shall update a Sampling and Analysis Plan (SAP) that was developed and approved by USACE in 2010 for similar sampling work under this project.

The SAP shall comply with and be prepared in accordance with EM 200-1-3, (USACE, February 2001) and the NJDEP Field Sampling Procedures Manual (2005). The SAP will include a Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP).

The SAP shall cover the following items:

- Project objectives and rationale
- Sampling procedures to be used
- Equipment to be used during sampling
- Equipment decontamination procedure
- Samples to be collected (primary and quality control)
- Summary tables of primary and quality control samples and analyses to be performed
- Analyses to be performed and methods used
- Analytical laboratory selected
- List of reporting limits and method detection limits for analytical parameters
- Applicable regulatory criteria to be used to compare soil data against
- Data usability and validation requirements
- Data deliverable format and type of deliverables from laboratory and contractor
- Waste disposal
- Individual well locations to be sampled
- Laboratory certifications
- Organization chart and project personnel responsibilities and duties

The submission of the draft and final shall follow the schedule in Section X. The draft SAP to be

submitted to the USACE shall include two bound copies and a PDF electronic version on a CD. The final SAP shall consist of 3 bound copies, 1 unbound copy, and all Electronic files (Word, Excel, etc) containing all files of text, tables, figures, and other materials contained in the plan, as well as a PDF electronic version on a CD. The PDF file shall include all appendices and attachments. The final SAP shall be USACE approved prior to starting any field activities.

2.3 Sample Collection and Analysis

The contractor shall collect soil and groundwater samples from the new monitor wells constructed at the Assunpink Creek site.

2.3.1 Soil Sampling

In addition to the soil samples collected as part of the boring logging work, soil samples will be collected for chemical analysis during placement of the four boreholes at the Assunpink Creek site. Soil samples shall be collected and analyzed every 4 feet for the analytes listed below. Assuming a depth of 20 feet bgs for each of the 4 wells, this would equal 5 primary soil samples per well, or a total of 20 primary samples.

Soil samples collected from split spoons during soil boring operations will be tested for the following:

- VOC – SW 846 8260B
- SVOC – SW 846 8270D
- TAL Metals (including Hg) – SW 846 6010B
- PCB – SW 846 8082A
- Pesticides, Chlorinated – SW 846 8081B
- Herbicides, Chlorinated – SW 846 8151A
- Oil and Grease – SW 846 9071A

The soil samples for VOC testing will be grab samples collected using Encore containers.

2.3.2 Groundwater Sampling

A total of 4 monitoring wells (4 primary samples) shall be sampled at the Assunpink Creek site. One round of sampling will be performed under this task order.

Groundwater samples collected from each of the monitor wells in this sampling program will be tested for the following:

- VOC – SW 846 8260B
- SVOC – SW 846 8270D
- Pesticides, Chlorinated – SW 846 8081B
- Herbicides, Chlorinated – SW 846 8151A

- PCB – SW 846 8082A
- TAL Metals (including Hg) – SW 846 6010B
- Oil and Grease – SW 846 9070A
- 2,3,7,8 Tetrachloro-p-dioxin – SW 1613
- Total Suspended Solids – SM 2540D
- Biochemical Oxygen Demand – SM 5210B
- pH (field purge data)

Groundwater samples from all of the 4 wells (4 primary samples) will be tested for all of the analytes.

The contractor shall submit the samples to an analytical laboratory (see Section 2.3.7) that is certified by NJDEP and NELAC, and complies with the DOD Quality System Manual. The analytical samples will have a standard turnaround time.

2.3.2.1 Groundwater and Surface Water Levels

For the groundwater sampling event, a complete round of water levels for the Assunpink Creek site being sampled will be obtained from each of the 4 wells to be sampled in the task order prior to initiation of sampling to provide a "snapshot" of groundwater levels in the area. The time and date of each measurement will be recorded. This round of water levels shall be performed and completed in a single event prior to the collection of the samples. At the same time, surface water levels in Assunpink Creek will be determined at the upstream and downstream end of the culvert.

2.3.2.2 Method of Sampling

Sampling will require that the Contractor follow the Final USEPA Region II Low Stress (Low Flow) Ground Water Sampling Standard Operating Procedure, dated December 2003. The following field parameters will be real-time monitored as per the low flow procedure using a groundwater quality meter to determine when the purged groundwater has stabilized prior to sampling:

- specific conductance
- pH
- temperature
- oxidation-reduction potential
- turbidity
- dissolved oxygen

A Grundfos 2-inch adjustable speed submersible pump/controller, or approved similar equipment, will be used for all groundwater sample collection in combination with a continuous flow-through cell suitable for taking water quality measurements using the groundwater quality meter. The groundwater quality meter must be calibrated for all measured parameters on a daily

basis, and must be documented in the field notebook. The same sampling method will be used for all sample locations in the monitoring program. Bailers and other sampling methods will not be used in this sampling program unless specifically approved by USACE. If insufficient groundwater is available to use the low flow sampling technique, no groundwater sample will be collected. If the water level in the well approaches the low flow drawdown limit and/or the well turbidity exceeds 40 NTUs the contractor shall contact the USACE POC to determine if a groundwater sample will be taken.

Prior to sampling, the new monitor well installed in this task order will require the contractor to obtain Teflon-lined tubing to be installed for sampling. The tubing in each well is intended to be dedicated.

All sampling equipment, including pumps and cells, etc. must be decontaminated prior to each sample location according to the USEPA Region II Low Flow groundwater sampling procedure referenced above. Pumps must be subjected to daily and between-well decontamination procedures, as discussed in the procedure.

2.3.3 Option C

Option C consists of collecting and analyzing surface water samples from Assunpink Creek at up to 2 locations (upstream and downstream of the culvert openings). The contractor shall provide unit costs for the analytical lab services so that 1 or 2 samples can be collected and analyzed.

Water samples collected from Assunpink Creek will be tested for the following:

- VOC – SW 846 8260B
- SVOC – SW 846 8270D
- Pesticides, Chlorinated – SW 846 8081B
- Herbicides, Chlorinated – SW 846 8151A
- PCB – SW 846 8082A
- TAL Metals (including Hg) – SW 846 6010B
- Oil and Grease – SW 846 9070A

2.3.4 Option D

Option D consists of collecting and analyzing water samples from culvert weepholes. This will likely entail placing the sample container opening against the concrete wall immediately beneath the weephole to allow water flowing from the hole and down the wall surface to flow into the container. The contractor shall provide unit costs for the analytical lab services so that up to 2 samples can be collected and analyzed. The water samples collected from the weepholes will be tested for the following parameters if possible. In the event insufficient water is available, the analytes are listed in descending sampling priority.

- VOC – SW 846 8260B

- SVOC – SW 846 8270D
- Pesticides, Chlorinated – SW 846 8081B
- Herbicides, Chlorinated – SW 846 8151A
- PCB – SW 846 8082A
- TAL Metals (including Hg) – SW 846 6010B
- Oil and Grease – SW 846 9070A

2.3.5 Investigation Derived Waste (IDW)

Cuttings and drilling mud generated during placement of pilot boreholes and well installation will be containerized, labeled, and stored by the contractor in an on-site area to be determined by USACE. One composite sample of the stored cuttings as well as the stored drilling mud shall be analyzed via TCLP tests and hazard characteristics for the following:

- TCLP metals (1) – SW 846 6010B
- TCLP VOC (2,3) – SW 846 8260B
- TCLP SVOC (4) – SW 846 8270C
- TCLP Herbicides/Pesticides (5) – SW 846 8151A/8081A
- Ignitability – SW 846 Chapter 7/1010A
- Reactivity, Sulfide - SW 846 Ch 7.3/9034
- Reactivity, Cyanide – SW 846 Ch 7.3/ 9010C/9014
- Corrosivity, SW 846 Chapter 7/9045D

Notes:

(1) TCLP metals to include As, Ba, Cd, Cr, Pb, Hg, Se, Ag
(2) TCLP VOC to include benzene, carbon tetrachloride, chorobenzene, chloroform, 1,2-dichloroethane, 1,1-dichloroethene, methyl ethyl ketone, tetrachloroethene, vinyl chloride
(3) TCLP VOC analysis to be done using zero head space extraction method. All other TCLP tests to be done using standard extraction method.
(4) TCLP SVOC to include total cresols, 2,4-dinitrotoluene, hexachloro-1,3-butadiene, hexachlorobenzene, nitrobenzene, pentachlorophenol, 2,4,5-trichlorophenol, 2,4,6-trichlorophenol, pyridine, 1,4-dichlorobenzene
(5) TCLP herbicides/pesticides to include 2,4-D, 2,4,5-TP, chlordane, endrin, heptachlor/heptachlor epoxide, lindane, methoxychlor, toxaphene
(6) The Encore sampling method will be employed for all soil samples analyzed for VOCs, i.e. BTEX compounds. For each sample, three plastic Encore containers must be collected as well as sufficient sample for determining moisture content. This may require the use of an additional vial or jar to collect sufficient soil sample.

Purge water from sampling monitor wells will also be containerized and added to the IDW from other site activities.

2.3.6 Analytical Requirements

2.3.6.1 Sample Preservation, Shipping and Holding Times

Sample preservation and holding times shall be in accordance with their applicable method. It is required that samples be shipped the same day of sample collection via overnight carrier to the contracted laboratory. Each day that samples are received at the laboratory, a copy of the sample receipt form and chain of custody form shall be electronically sent or faxed to the USACE project manager and/or project chemist.

2.3.6.2 Laboratory Parameters of Interest, Data Quality Objectives, Quality Assurance and Quality Control (QA/QC), and Corresponding Methodologies

The parameter list shall be standardized for all wells included in the sampling event. The parameter list, including analyte list and analytical methods are included in Tables 2 and 3 and comply with the ADR project library.

Data quality objectives will be met by ensuring that the proper blanks are collected for analysis along with the groundwater samples. Ten percent field quality control samples (blind field duplicates) are required during the sampling effort for all analytes.

Note: Information regarding the identities of the blind duplicates must be included in field notebooks where it can be retrieved and included in the summary report and imported into EDMS.

Rinsate blanks shall be collected at a rate of ten percent each day that sampling equipment decontamination is performed, and analyzed for all analytes. One trip blank for VOC analysis must be shipped each day that aqueous VOC samples are collected. A trip blank shall accompany all coolers containing aqueous VOC samples. It is recommended that all VOC samples collected each day be shipped in one cooler to minimize the number of trip blanks.

MS/MSD samples will be collected at a rate of five percent (one in twenty) for all analytes.

Laboratory QA/QC shall include at a minimum: documentation of ongoing instrument calibration, method blanks (one with every batch of 1-20 samples), control spikes, duplicate matrix spikes and percent recoveries for internal quantitation standards and surrogate standards.

2.3.6.3 Contract Laboratory

The contracted laboratory shall perform the required analyses. The analytical laboratory shall provide the following and meet the following criteria:

- The laboratory shall be certified by NELAC, comply with the Department of Defense (DOD) Quality Systems Manual (QSM) and be approved by the USACE Philadelphia District for the parameters to be analyzed;
- Laboratory shall participate in ISO Guide 25 requirements;

- The laboratory shall be certified by the State of New Jersey for the parameters to be analyzed;
- The laboratory shall be capable of producing an ADR (A1 and A3) electronic data deliverable (EDD).
- The laboratory shall be capable of providing electronic data deliverables in the Automated Data Review (ADR) EDD that complies with the project ADR library.
- Laboratory shall be required to produce a legally defensible data reporting package, suitable for external data validation by a third party, copied onto a CD-ROM. The package should include all text, tables and chromatograms and raw data, as they were prepared in their respective original format (pdf). The Contractor must retain all analytical data for a period of 5 years or ensure that the laboratory retains all analytical data for 5 years after the date of analysis. This is required in the event that external third party data validation is performed.
- The laboratory shall be capable of performing 90% of the analyses "in-house". A subcontract laboratory must be approved by USACE prior to initiation of any work and also be capable of meeting the requirements set forth in this SOW;
- The laboratory must provide reporting limits for all parameters listed in this scope. These reporting limits must be approved by USACE prior to initiation of work.
- The laboratory must be capable of providing same-day courier pick up service to and from the site or the contractor's facility.
- The laboratory must have web-based capability that will allow the user to track the status of samples, data results, billing invoices, and be able to post data on the laboratory secure internet website.

2.3.6.4 Laboratory Reporting Requirements

The reporting package will consist of a legally defensible CLP-type (Tier 1) data package which is fully data validatable by an external third party. Data shall be maintained in a format that can be imported to an Access database to permit rapid selection and mathematical manipulation of data. Hard copy data reporting packages shall include at a minimum, the following information: sample delivery group, sample identifier (field and laboratory), test method, dilution factor, client sample ID, lab sample ID, sample depth, date sampled, data received, data analyzed, CAS number, parameter, results, qualifier, units, matrix, level (low/high), detection/reporting limit, method, qualifier explanation, and moisture content.

Additionally, the package will have definitive data, produced using rigorous analytical methods, such as EPA reference methods. The definitive data package shall include a cover sheet; table of contents; case narrative; analytical results; sample documentation information; and internal laboratory QA/QC information. The data package shall have sequentially numbered pages.

Additional information is provided below:

(1) Cover Sheet. The cover sheet shall specify the following information:
- Name, location and certification numbers of laboratory

- Name, location and certification numbers of any subcontractor laboratory used
- Contract number
- Client name and address
- Project name and site location
- Statement of data authenticity and official signature of person authorizing report release
- Amendments to previous reports will identify the serial number for the previous report and state the reason(s) for re-issuance of the report.

(2) Table of Contents. Laboratory data packages shall be organized in a format that allows for easy identification and retrieval of information. An index and/or table of contents shall be included for this purpose.

(3) Case Narrative. A case narrative shall be included in each report, outlining any problems with analysis. The case narrative shall also list all methods used. The case narrative shall contain a table correlating field sample numbers and laboratory sample numbers, and indicate which analytical test methods were performed and by which laboratories. Samples that were received but not analyzed shall also be identified. Extractions or analyses that are performed out of holding times shall be appropriately noted. The case narrative shall define all data qualifiers or flags. Deviations of QC sample results from laboratory acceptance limits shall be noted and associated corrective actions taken by the laboratory shall be addressed. Any other factors that could affect the sample results are to be discussed.

(4) Analytical Results. The results for each sample shall contain the following information at a minimum:

- Project name and unique ID number
- Field sample ID number as written on custody form
- Laboratory name and location (city and state)
- Laboratory sample ID number
- Preparation and analysis batch numbers
- Date sample collected
- Date sample received
- Date sample extracted or prepared
- Date sample analyzed
- Analysis time when holding time limit is less than forty-eight hours
- Method numbers for all preparation and cleanup procedures
- Analysis procedure including method numbers
- Analyte or parameter
- Detection limits (DL) - Estimated sample detection limits based on method detection limitsadjusted for sample-specific factors (e.g., aliquot size, dilution or concentration factors, moisture content of a soil or sediment)
- Quantitation Limits (QL)
- Analytical results with correct number of significant figures (Results for solid matrices should be reported on a dry weight basis)
- Concentration units

- Dilution factor: All reported data shall reflect any dilutions and/or concentrations. The dilution factor, if applicable, should be noted on the analytical report. If dilution is required for organic analytes, data from both runs should be recorded and reported.
- Matrix (soil, water, oil, etc.)
- Percent moisture or percent solids
- Chromatograms and other raw data
- Sample aliquot analyzed
- Final extract volume
- Sample preservation

(5) Lower Limit Reporting. The laboratory may use a reporting limit (RL) expressed in terms of detection limit, quantitation limit, regulatory action level, or project-specific threshold limit, however the laboratory's use of these terms must be well defined. In addition, if the non-detect "ND", "U","<", or other lower limit reporting convention is used, then these terms must also be defined.

(6) Sample Documentation. Original Chain of Custody (COC) records, shipping documents, and Sample Cooler Receipt Forms shall be attached to each data package.

(7) QC/QA Information. The minimum data package must include internal laboratory QC/QA data with their respective acceptance criteria. The data package shall also include the laboratory's method detection limits for project-specific parameters. The data package shall correlate the method QC data with the corresponding environmental samples on a per batch basis. Method QC data include all spike recoveries, including surrogate spike recoveries; all measures of precision, including relative percent difference (RPD); and all control limits for accuracy and precision. This would include laboratory performance information such as results for method blanks (MBs), recoveries for Laboratory Control Standard (LCS) and Laboratory Control Standard Duplicate (LCSD), RPD for LCS/LCSD pairs, and recoveries for QC sample surrogates; and matrix-specific information such as sample duplicate RPDs, MS and MSD recoveries, MS/MSD RPDs, and field sample surrogate recoveries, serial dilutions, and post-digestion spikes. At a minimum, internal QC samples shall be analyzed and reported at rates specified in the specific methods or as specified in the contract, whichever is greater. Any deviations from the control limits shall be noted. For example, the data package should document the matrix spike (MS) and duplicate spike level, the MS and duplicate spike sample result, the percent recovery of the MS and duplicate, the respective RPD, and the acceptance criteria for spike recovery and RPD. The data reporting package will contain sufficient information to allow complete reconstruction of the analyses that were performed.

2.3.6.5 Laboratory Electronic Data Deliverables and Contractor Data Review requirements

USACE will require the following electronic and hard copy products from the analytical laboratory:

- CD-ROM containing Adobe Portable Document Format (pdf file) of the complete data validatable reporting package including all raw data.

- Electronic Data Deliverable (EDD) compliant with the USACE's Automated Data Review (ADR) specification. An ADR EDD will be delivered for each laboratory report (i.e., Sample Delivery Group).

APPENDIX A-2

USACE Scope of Work - Task Order Modifications: 001

Scope of Work – Task Order Modification
Architect Engineer Services
Monitor Well Installation and Sampling
Assunpink Creek, Trenton, New Jersey

Date: March 25, 2011
Revised Date: April 14, 2011

1.0 GENERAL INFORMATION:

1.1	Contract Number:	W912BU-10-D-0001
1.2	Contract Action:	Task Order Modification 001001
1.3		Name and Location of Project: Provide Licensed Site Remediation Specialist and Additional Well Monitoring and Sampling at Assunpink Creek, NJ.
1.4	Firm Name, Address:	O'Brien & Gere 301 East Germantown Pike Bentwood Campus, 3rd Floor East Norriton, PA 19401
1.5	Name of Sub-Contractors:	Laboratory: Accutest, Dayton, NJ Driller: Uni-Tech Drilling
1.6	Points of Contact:	A/E: Tom Nowlan (484) 804-7213 USACE: Mike Mohn, (EC-EV) (215) 656-6887

1.7 Project Overview:

The U.S. Army Corps of Engineers, Philadelphia District (USACE) is presently in the planning phase for the removal of an existing culvert and stream restoration along a section of the Assunpink Creek located in Trenton, NJ. As part of the District's needs, a follow up environmental investigation will be required at this site. O'Brien and Gere has already performed site work in a previous task order to support the efforts of USACE in this project. The results of these site investigations will be added to existing background characterization

2.4.2 Additional Soil Sampling at Boring Locations that will not be Converted to Wells

At each of the three boring locations at which no monitor wells will be installed, the contractor shall collect soil samples for all of the analyses listed in section 2.4. An average of 5 soil samples will be collected at each of the 3 soil borings, for a total of 15 primary samples. Quality control samples will be collected at the same frequency described in the base task order.

2.5 Produce Laboratory Deliverables in Accordance with NJAC 7:26 E

In addition to the reporting and deliverables requirements contained in the base task order, the contractor shall produce laboratory deliverables and other reporting requirements in accordance with the minimum requirements of Paragraphs 1-3 of NJAC 7:26E-3.13(c).

Additionally, the electronic data deliverable (EDD) produced by the laboratory under the base task order shall be produced in the USACEPAP3 format. Accutest Laboratory has this format already.

3.0 DELIVERABLES

The modification work items shall be noted and discussed in the project reports to be generated under the base task order. All project deliverables (including project reports, data tables, databases, etc) shall reflect the results of these modification items as needed.

4.0 COORDINATION AND EXECUTION OF WORK

The USACE Project Manager and point of contact for this Task Order modification will be Mike Mohn (215) 656-6887. The contractor shall keep in close contact with the project manager who will be available for coordination with the document approvals, sampling activities, and laboratory analysis.

5.0 PERIOD OF PERFORMANCE

The work items in this task order modification are not expected to change the period of performance of the base task order (150 calendar days after award).

6.0 COMPENSATION TO THE CONTRACTOR

In consideration of the performance of the work under this delivery order, the Contractor shall be paid $ 38,835.00 for the work described herein. This shall constitute complete payment for all services required and expenses incurred in the performance of the work.

Thomas Nowlan — 4/20/11 Date
Contractor's Representative

Michael F. Mohn — 4/27/11 Date
A/E Manager

Paul D. Bacani — 4/27/11 Date
A/E Contract Negotiator

Michelle L. Johnson — Date
Contracting Officer

APPENDIX A-3

USACE Scope of Work - Task Order Modification: 002

Scope of Work – Task Order Modification 001002
Architect Engineer Services
Additional Monitor Well Monitoring and Sampling at
Assunpink Creek Project, Trenton, New Jersey

Date: May 6, 2011
Revised Date: May 23, 2011

1.0 GENERAL INFORMATION:

1.1	Contract Number:	W912BU-10-D-0001
1.2	Contract Action:	Task Order Modification 001002
1.3	Name and Location of Project:	Additional Well Monitoring and Sampling at Assunpink Creek, Trenton, NJ
1.4	Firm Name, Address:	O'Brien and Gere 301 East Germantown Pike, 3rd Floor East Norriton, PA 19401
1.5	Name of Sub-Contractors:	Laboratory: Accutest, Dayton, NJ Driller: Uni-Tech Drilling, Franklinville, NJ
1.6	Points of Contact:	A/E: Tom Nowlan (215) 628-9100 USACE: Mike Mohn (215) 656-6887

1.7 Project Overview:

The U.S. Army Corps of Engineers, Philadelphia District (USACE) is presently in the planning phase for the removal of an existing culvert and stream restoration along a section of the Assunpink Creek located in Trenton, NJ. As part of the District's needs, a follow up environmental investigation will be required at this site. O'Brien and Gere has already performed site work in a previous task order to support the efforts of USACE in this project. The results of these site investigations will be added to existing background characterization information for USACE and the City of Trenton in the removal of the existing culvert and the design and construction of the new stream channel, as well as furthering the delineation of site soil and groundwater.

The project area for this investigation is a 500-foot section of the lower Assunpink Creek in downtown Trenton where the creek is contained within a buried box culvert known as the Broad Street Culvert. The investigation area is situated in an open grassy area adjacent to the State of New Jersey Department of Human Services (DHS) building and is bound by East Lafayette St. to the North, South Warren St. to the West, Assunpink Dr. to the South, and South Broad St. to the East. The City of Trenton is the owner of the site property.

This Task Order Modification #002 includes work items and changes that will need to be completed based on project findings to-date and requests from the client (City of Trenton). These modifications are described below.

2.0 SCOPE OF WORK

This task order modification covers the following work items, which are changes to the original scope of work for Task Order 0010.

- Install an additional two (2) soil borings
- Additional labor for decontamination
- Collect and analyze soil samples
- Produce laboratory deliverables in accordance with NJAC 7:26 E

The descriptions below provide more information and detail for each of the work items in this Task Order.

2.1 Install Additional Soil Borings

Based on observations of soil and groundwater conditions in existing project soil borings, the contractor shall install two additional soil borings between wells AC-2 and AC-3 and between well AC-3 and the former location of test pit TP-7. All soil boring work shall be performed in accordance with NJDEP regulations. The specific locations of each of the borings will be selected and marked by USACE prior to initiation of the field work. USACE expects that the soil boring work will be performed during the same mobilization to install the monitor wells (see base task order). Each boring will be placed down to the bedrock (expected to be approximately 20 feet bgs).

The contractor shall follow the same procedures as those in the scope of work for the base task order for these two additional soil borings. This shall include obtaining any required permits needed. Continuous split-spoon sampling and logging shall be performed by the contractor during the soil boring installation.

2.2 Additional Labor for Decontamination

The costs for a New Jersey-licensed driller (1 day) and 55-gallon drums to contain drill cuttings (2 drums) from the additional soil borings described above are included in the Optional Task A of the base task order. However, the work described above will require an additional two hours of labor by the drill crew for setup/breakdown and decontamination, which are included in this Modification #002.

2.3 Collect and Analyze Soil Samples

An average of 5 soil samples shall be collected by the contractor from each of the two additional soil borings to be placed at the site, resulting in a total of 10 primary soil samples. However, during performance of the work described under Modification #001 to the base task order, two soil samples (as specified therein) were not collected and analyzed. Therefore, a total of 8 primary samples are included under this Modification #002.

In addition, four Encore samplers budgeted under Modification #001 were not used as a result of collecting fewer soil samples. Therefore, the contractor shall provide and collect an additional 9 Encore samples under this Modification #002.

As required by the approved Quality Assurance Project Plan (QAPP) for the base task order, an additional 4 quality-control (QC) samples shall be collected/prepared and analyzed under Modification #002. This includes one duplicate, one method spike, one method spike duplicate, and one rinse blank sample.

All soil and QC samples shall be analyzed for:

- TCL VOC + TICS – SW 846 8260B
- TCL SVOC + TICS – SW 846 8270C
- TAL Metals (including Hg) – SW 846 6010B
- PCBs – SW 846 8082A
- Pesticides, Chlorinated – SW 846 8081B
- Herbicides, Chlorinated – SW 846 8151A
- Oil and Grease – SW 846 9071A
- Extractable Petroleum Hydrocarbons (EPH) – NJDEP method (see NJAC 7:26E)

The EPH tests shall be performed with the assumption that the source and identity of any petroleum based product found is unknown (i.e., for full characterization). The protocol to be followed is described in a NJDEP document called Phase-in for implementation of the "Protocol for Addressing Extractable Petroleum Hydrocarbons" and the associated analytical method "Analysis of Extractable Petroleum Hydrocarbon Compounds (EPH) in Aqueous and Soil/Sediment/Sludge Matrices" (Version 3.0, Aug 9, 2010), as found at: http://www.nj.gov/dep/srp/guidance/rs/#phc and is the 4th link under section heading Petroleum Hydrocarbons (PHC) Guidance Documents.

6.0 COMPENSATION TO THE CONTRACTOR

In consideration of the performance of the work under this delivery order, the Contractor shall be paid $14,786 for the work described herein. This shall constitute complete payment for all services required and expenses incurred in the performance of the work.

6/3/2011

Thomas Nowlan — Date
Contractor's Representative

6/6/11

Michael F. Mohn — Date
Project Manager

6/6/11

Paul D. Bacani — Date
A/E Negotiator

APPENDIX B

Monitoring Well Documentation

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: Matthew Brener
Name of Facility: City of Trenton
Location: 319 E. State Street, Trenton City, NJ 08608
UST Registration No.: _____ BUST case No.: ____-____-____-_____

CERTIFICATION

Well Permit Number: E201103686 Owner's Well Number AC-1
Well Completion Date: 4/28/11 Lithologic Log: Attach

Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	0
Total Depth of Well to the nearest 1/2 foot:	20
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	7
Screen Length (or length of open hole) in feet:	13
Screen or Slot Size:	.010
Screen or Slot Material:	PVC
Casing Material: (PVC, Steel or Other-Specify):	PVC
Casing Diameter (inches):	2
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	12
Yield (gallons per minute):	2
Development Technique (specify):	Pump & Surge
Length of Time Well is Developed/Pumped or Bailed:	4 Hours 0 Minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Gerald F. Freck — Gerald F. Freck
Name (Type or Print) — Signature

M490750
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative:

Gerald F. Freck — Gerald F. Freck — 6/16/11
Name (Type or Print) — Signature — Date

Title: President

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: Matthew Brener
Name of Facility: City of Trenton
Location: 319 E. State Street, Trenton City, NJ 08608
UST Registration No.: _____ BUST case No.: ____-____-____-_____

CERTIFICATION

Well Permit Number: E201103687 Owner's Well Number AC-2
Well Completion Date: 5/3/11 Lithologic Log: Attach

Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	2.5
Total Depth of Well to the nearest 1/2 foot:	14
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	6.5
Screen Length (or length of open hole) in feet:	10
Screen or Slot Size:	.010
Screen or Slot Material:	PVC
Casing Material: (PVC, Steel or Other-Specify):	PVC
Casing Diameter (inches):	2
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	7
Yield (gallons per minute):	2
Development Technique (specify):	Pump & Surge
Length of Time Well Is Developed/Pumped or Bailed:	4 Hours 0 Minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Gerald F. Freck — Gerald F. Freck
Name (Type or Print) — Signature

M490750 — Seal
Certification or License No.

Certification by Executive Officer or Duly Authorized Representative:

Gerald F. Freck — Gerald F. Freck — 6/16/11
Name (Type or Print) — Signature — Date
Title: President

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: Matthew Brener
Name of Facility: City of Trenton
Location: 319 E. State Street, Trenton City, NJ 08608
UST Registration No.: _____ BUST case No.: ____-____-____-_____

CERTIFICATION

Well Permit Number: EZ01103688 Owner's Well Number AC-3
Well Completion Date: 5/2/11 Lithologic Log: Attach

Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	2.5
Total Depth of Well to the nearest 1/2 foot:	11.5
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	6.5
Screen Length (or length of open hole) in feet:	7.5
Screen or Slot Size:	.010
Screen or Slot Material:	PVC
Casing Material: (PVC, Steel or Other-Specify):	PVC
Casing Diameter (inches):	2
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	7.2
Yield (gallons per minute):	2
Development Technique (specify):	Pump & Surge
Length of Time Well is Developed/Pumped or Bailed:	4 Hours 0 Minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

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M490750 — Seal
Certification or License No.

Certification by Executive Officer or Duly Authorized Representative:

Gerald F. Freck — Gerald F. Freck — 6/16/11
Name (Type or Print) — Signature — Date
Title: President

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

Name of Owner: Matthew Brener
Name of Facility: City of Trenton
Location: 319 E. State Street, Trenton City, NJ 08608
UST Registration No.: _____ BUST case No.: ____-____-____-_____

CERTIFICATION

Well Permit Number: E201103689 Owner's Well Number AC-4
Well Completion Date: 5/2/11 Lithologic Log: Attach

Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	2.5
Total Depth of Well to the nearest 1/2 foot:	14
Depth to Top of Screen (or Top of Open Hole) From Top of Casing (one-hundredth of a foot):	6.5
Screen Length (or length of open hole) in feet:	10
Screen or Slot Size:	.010
Screen or Slot Material:	PVC
Casing Material: (PVC, Steel or Other-Specify):	PVC
Casing Diameter (inches):	2
Static Water Level From Top of Casing at the Time of Installation (one-hundredth of a foot):	7.1
Yield (gallons per minute):	2
Development Technique (specify):	Pump & Surge
Length of Time Well is Developed/Pumped or Bailed:	4 Hours 0 Minutes

Authentication

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Technical Certification:

Gerald F. Freck — Gerald F Freck
Name (Type or Print) — Signature

M490750 — Seal
Certification or License No.

Certification by Executive Officer or Duly Authorized Representative:

Gerald F. Freck — Gerald F Freck — 6/16/11
Name (Type or Print) — Signature — Date
Title: President

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Trenton

Name of Facility: Assunpink Creek Restoration Project

Location: Block 105, Lot 1, 25 E. Lafayette Street, City of Trenton, Mercer County, NJ 08608

Case Number(s): _____ **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
(This number must be permanently affixed to the well casing.) E 2 0 1 1 0 3 6 8 6

Owners Well Number (As shown on application or plans): AC-1

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74° 45′ 55.8″ **Latitude:** North 40° 13′ 02.7″

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 504,225 feet East 417,984 feet

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01′): 24.90

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Elevations are referenced to NAVD 1988, Horizontal datum is N.J.S.P.C. NAD 1983 based on NGS OPUS solution: 6567143o.11o 000234937 dated 05/24/11. Base Stations used: PARL (PID DF 5884), NJDY (PID DH3766), and NJTR (PID DG 7014.)

Significant observations and notes: Outer casing elevation = 25.24

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

PROFESSIONAL LAND SURVEYOR'S SIGNATURE 06/09/11 **DATE**

Robert E. Vargo, PLS GS43261

PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

P.O. Box 647, Franklinville, New Jersey 08322 856.694.1716

PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Trenton

Name of Facility: Assunpink Creek Restoration Project

Location: Block 105, Lot 1, 25 E. Lafayette Street, City of Trenton, Mercer County, NJ 08608

Case Number(s): _____ **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
(This number must be permanently affixed to the well casing.) E 2 0 1 1 0 3 6 8 7

Owners Well Number (As shown on application or plans): AC-2

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74° 45′ 55.1″ **Latitude:** North 40° 13′ 03.4″

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 504,287 feet East 418,039 feet

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01′): 22.71

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Elevations are referenced to NAVD 1988, Horizontal datum is N.J.S.P.C. NAD 1983 based on NGS OPUS solution: 6567143o.11o 000234937 dated 05/24/11. Base Stations used: PARL (PID DF 5884), NJDY (PID DH3766), and NJTR (PID DG 7014.)

Significant observations and notes: Outer casing elevation = 23.11 Ground elevation = 20.4

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

PROFESSIONAL LAND SURVEYOR'S SIGNATURE 06/09/11 **DATE**

Robert E. Vargo, PLS GS43261

PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

P.O. Box 647, Franklinville, New Jersey 08322 856.694.1716

PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Trenton

Name of Facility: Assunpink Creek Restoration Project

Location: Block 105, Lot 1, 25 E. Lafayette Street, City of Trenton, Mercer County, NJ 08608

Case Number(s): _____ **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
(This number must be permanently affixed to the well casing.) E 2 0 1 1 0 3 6 8 8

Owners Well Number (As shown on application or plans): AC-3

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74° 45′ 53.6″ **Latitude:** North 40° 13′ 04.6″

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 504,411 feet East 418,160 feet

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01′): 22.17

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Elevations are referenced to NAVD 1988, Horizontal datum is N.J.S.P.C. NAD 1983 based on NGS OPUS solution: 6567143o.11o 000234937 dated 05/24/11. Base Stations used: PARL (PID DF 5884), NJDY (PID DH3766), and NJTR (PID DG 7014.)

Significant observations and notes: Outer casing elevation = 22.50 Ground Elev=19.4

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

PROFESSIONAL LAND SURVEYOR'S SIGNATURE 06/09/11 **DATE**

Robert E. Vargo, PLS GS43261

PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

P.O. Box 647, Franklinville, New Jersey 08322 856.694.1716

PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Trenton

Name of Facility: Assunpink Creek Restoration Project

Location: Block 105, Lot 1, 25 E. Lafayette Street, City of Trenton, Mercer County, NJ 08608

Case Number(s): _____ **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
(This number must be permanently affixed to the well casing.) E 2 0 1 1 0 3 6 8 9

Owners Well Number (As shown on application or plans): AC-4

Geographic Coordinate NAD 83 (to nearest 1/10 of second):

Longitude: West 74° 45′ 53.1″ **Latitude:** North 40° 13′ 05.5″

New Jersey State Plane Coordinates NAD 83 to nearest 10 feet:

North 504,503 feet East 418,196 feet

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01′): 22.64

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Elevations are referenced to NAVD 1988, Horizontal datum is N.J.S.P.C. NAD 1983 based on NGS OPUS solution: 6567143o.11o 000234937 dated 05/24/11. Base Stations used: PARL (PID DF 5884), NJDY (PID DH3766), and NJTR (PID DG 7014.)

Significant observations and notes: Outer casing elevation = 23.01 Ground Elev=20.2

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

PROFESSIONAL LAND SURVEYOR'S SIGNATURE 06/09/11 **DATE**

Robert E. Vargo, PLS GS43261

PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

P.O. Box 647, Franklinville, New Jersey 08322 856.694.1716

PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

New Jersey State Department of Environmental Protection
Bureau of Water Systems and Well Permitting
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201103686

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: GERALD FRECK, MASTER LICENSE # 490750

Permit Issued to: UNI-TECH DRILLING CO INC

Company Address: PO BOX 407 FRANKLINVILLE, NJ 08322

PROPERTY OWNER

Name: MATTHEW BRENER

Organization: City of Trenton

Address: 319 E State Street

City: Trenton City State: New Jersey Zip Code: 08608

PROPOSED WELL LOCATION

Facility Name: Assunpink Creek

Address: 310 S Warren Street

County: Mercer Municipality: Trenton City Lot: 4 Block: 9503

Easting (X): 417962 Northing (Y): 504217
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: AC-1

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 4

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 20

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: March 15, 2011
Expiration Date: March 14, 2012

Approved by the authority of:
Bob Martin
Commissioner

John Fields, Acting Bureau Chief
Bureau of Water Systems and Well Permitting

New Jersey State Department of Environmental Protection
Bureau of Water Systems and Well Permitting
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201103687

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: GERALD FRECK, MASTER LICENSE # 490750

Permit Issued to: UNI-TECH DRILLING CO INC

Company Address: PO BOX 407 FRANKLINVILLE, NJ 08322

PROPERTY OWNER

Name: MATTHEW BRENER

Organization: City of Trenton

Address: 319 E State Street

City: Trenton City State: New Jersey Zip Code: 08608

PROPOSED WELL LOCATION

Facility Name: Assunpink Creek

Address: 319 E State Street

County: Mercer Municipality: Trenton City Lot: 4 Block: 9503

Easting (X): 418048 Northing (Y): 504283
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: AC-2

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 4

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 20

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: March 15, 2011
Expiration Date: March 14, 2012

Approved by the authority of:
Bob Martin
Commissioner

John Fields, Acting Bureau Chief
Bureau of Water Systems and Well Permitting

New Jersey State Department of Environmental Protection
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PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201103688

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The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: GERALD FRECK, MASTER LICENSE # 490750

Permit Issued to: UNI-TECH DRILLING CO INC

Company Address: PO BOX 407 FRANKLINVILLE, NJ 08322

PROPERTY OWNER

Name: MATTHEW BRENER

Organization: City of Trenton

Address: 319 E State Street

City: Trenton City State: New Jersey Zip Code: 08608

PROPOSED WELL LOCATION

Facility Name: Assunpink Creek

Address: 319 E State Street

County: Mercer Municipality: Trenton City Lot: 4 Block: 9503

Easting (X): 418222 Northing (Y): 504421
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: AC-3

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 4

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 20

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: March 15, 2011
Expiration Date: March 14, 2012

Approved by the authority of:
Bob Martin
Commissioner

John Fields, Acting Bureau Chief
Bureau of Water Systems and Well Permitting

New Jersey State Department of Environmental Protection
Bureau of Water Systems and Well Permitting
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201103689

WELL PERMIT

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit

Certifying Driller: GERALD FRECK, MASTER LICENSE # 490750

Permit Issued to: UNI-TECH DRILLING CO INC

Company Address: PO BOX 407 FRANKLINVILLE, NJ 08322

PROPERTY OWNER

Name: MATTHEW BRENER

Organization: City of Trenton

Address: 319 E State Street

City: Trenton City State: New Jersey Zip Code: 08608

PROPOSED WELL LOCATION

Facility Name: Assunpink Creek

Address: 25 E Lafayette Street

County: Mercer Municipality: Trenton City Lot: 1 Block: 105

Easting (X): 418183 Northing (Y): 504535
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: AC-4

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 4

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 20

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: March 15, 2011
Expiration Date: March 14, 2012

Approved by the authority of:
Bob Martin
Commissioner

John Fields, Acting Bureau Chief
Bureau of Water Systems and Well Permitting

Service ID: 130092

This document has not yet been reviewed and approved or denied by the NJ DEP. Deficiencies in submittal information or actual construction may result in denial.

WELL RECORD SUBMITTAL PDF

PROPERTY OWNER: Matthew Brener

Organization: City of Trenton

Address: 319 E State Street, Trenton City (Mercer), New Jersey 08608

WELL LOCATION: Assunpink Creek

Address: 310 S Warren Street

County: Mercer Municipality: Trenton City Lot: 4 Block: 9503

Easting(X): 417962 Northing(Y): 504217 Coordinate System: NJ State Plane (NAD83) - USFEET

Method: GPS Point of Reference: Well

GPS Manufacturer: Magellan Surveyor Name:

GPS Model: Mobile Mapper CX Surveyor License #:

Accuracy: 1 Accuracy units: Feet

WELL USE: Monitoring **DATE WELL STARTED:** 04/27/2011

Other Use(s): **DATE WELL COMPLETED:** 04/28/2011

WELL CONSTRUCTION

Permit Number Total Depth Drilled(ft): 21 Drilling Company:

E201103686 Finished Well Depth(ft): 20 Driller Name: Gerald Freck

Local ID: AC-1 Well was finished: Flush Mount License No.: 490750

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating/Screen Slot # (lbs/sch no.)
Borehole(s)	0	21	8	N/A	N/A
Casing(s)	0	7	2	PVC	Sch 40
Screen(s)	7	20	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	5	8	2	5	95	8.5
Gravel Pack	5	20	8	2	#0/#00 Sand		

Grouting Method: Pressure method (Tremie Pipe) Drilling Method: Hollow Stem Augers

Additional Information:

Attachments:

RECORD OF TEST Depth to Pump: _____ ft. below land surface

Test Date: _____ Pump Capacity: _____ gpm

PENDING APPROVAL

Static Water Level: 12 ft. below land surface

Pumping Water Level: _____ ft. below land surface

Water Level Measure Tool: M-Scope

Pumping Equipment: _____

Well Yield: _____ gpm

Total Design Head: _____ ft.

Pump Horsepower: _____

If pump tested Discharge Rate: _____ gpm

Duration of Test: _____ hours

Date Boring Decommissioned: _____

PUMPING EQUIPMENT AND ADDITIONAL INFORMATION

Installed: _____

Installer's Name: _____

Installer's Registration No.: _____

Pump Type: _____

Well Development Period: 4 hours

Method of Development: Pump & Surge

Protective Casing: Yes

Drilling Fluid: _____

Drill Rig: CME-750X

Health and Safety Plan: Yes

GEOLOGIC LOG

Depth to Top	Depth to Bottom	Color	USCS	Additional Description
0	10	Brown	OT - Other	Historic Fill
10	21	Brown	SM - Silty sands, sand-silt mixtures	Cobbles & Boulders

PENDING APPROVAL

Service ID: 130096

This document has not yet been reviewed and approved or denied by the NJ DEP. Deficiencies in submittal information or actual construction may result in denial.

WELL RECORD SUBMITTAL PDF

PROPERTY OWNER: Matthew Brener

Organization: City of Trenton

Address: 319 E State Street, Trenton City (Mercer), New Jersey 08608

WELL LOCATION: Assunpink Creek

Address: 319 E State Street

County: Mercer Municipality: Trenton City Lot: 4 Block: 9503

Easting(X): 418048 Northing(Y): 504283 Coordinate System: NJ State Plane (NAD83) - USFEET

Method: GPS Point of Reference: Well

GPS Manufacturer: Magellan Surveyor Name:

GPS Model: Mobile Mapper CX Surveyor License #:

Accuracy: 1 Accuracy units: Feet

WELL USE: Monitoring **DATE WELL STARTED:** 05/03/2011

Other Use(s): **DATE WELL COMPLETED:** 05/03/2011

WELL CONSTRUCTION

Permit Number Total Depth Drilled(ft): 16 Drilling Company:

E201103687 Finished Well Depth(ft): 14 Driller Name: Gerald Freck

Local ID: AC-2 Well was finished: Above Grade License No.: 490750

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating/Screen Slot # (lbs/sch no.)
Borehole(s)	0	16	8	N/A	N/A
Casing(s)	0	4	2	PVC	Sch 40
Screen(s)	4	14	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	2	8	2	2	38	3.5
Gravel Pack	2	15	8	2	#0/#00 Morie		

Grouting Method: Pressure method (Tremie Pipe) Drilling Method: Hollow Stem Augers

Additional Information:

Attachments:

RECORD OF TEST Depth to Pump: ft. below land surface

Test Date: Pump Capacity: gpm

PENDING APPROVAL

Static Water Level: 7 ft. below land surface

Pumping Water Level: _____ ft. below land surface

Water Level Measure Tool: M-Scope

Pumping Equipment: _____

Well Yield: _____ gpm

Total Design Head: _____ ft.

Pump Horsepower: _____

If pump tested Discharge Rate: _____ gpm

Duration of Test: _____ hours

Date Boring Decommissioned: _____

PUMPING EQUIPMENT AND ADDITIONAL INFORMATION

Installed: _____

Installer's Name: _____

Installer's Registration No.: _____

Pump Type: _____

Well Development Period: 4 hours

Method of Development: Pump & Surge

Protective Casing: Yes

Drilling Fluid: _____

Drill Rig: CME-750X

Health and Safety Plan: Yes

GEOLOGIC LOG

Depth to Top	Depth to Bottom	Color	USCS	Additional Description
0	12	Brown	OT - Other	Fill, Cobbles, Boulders
12	16	Brown	SM - Silty sands, sand-silt mixtures	Some Gravel

PENDING APPROVAL

Service ID: 130125

This document has not yet been reviewed and approved or denied by the NJ DEP. Deficiencies in submittal information or actual construction may result in denial.

WELL RECORD SUBMITTAL PDF

PROPERTY OWNER: Matthew Brener

Organization: City of Trenton

Address: 319 E State Street, Trenton City (Mercer), New Jersey 08608

WELL LOCATION: Assunpink Creek

Address: 319 E State Street

County: Mercer Municipality: Trenton City Lot: 4 Block: 9503

Easting(X): 418222 Northing(Y): 504421 Coordinate System: NJ State Plane (NAD83) - USFEET

Method: GPS Point of Reference: Well

GPS Manufacturer: Magellan Surveyor Name:

GPS Model: Mobile Mapper CX Surveyor License #:

Accuracy: 1 Accuracy units: Feet

WELL USE: Monitoring **DATE WELL STARTED:** 04/29/2011

Other Use(s): **DATE WELL COMPLETED:** 05/02/2011

WELL CONSTRUCTION

Permit Number Total Depth Drilled(ft): 12 Drilling Company:

E201103688 Finished Well Depth(ft): 11.5 Driller Name: Gerald Freck

Local ID: AC-3 Well was finished: Above Grade License No.: 490750

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating/Screen Slot # (lbs/sch no.)
Borehole(s)	0	12	8	N/A	N/A
Casing(s)	0	4	2	PVC	Sch 40
Screen(s)	4	11.5	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	2.5	8	2	2.5	48	4.5
Gravel Pack	2.5	12	8	2	#0/#00 Morie		

Grouting Method: Pressure method (Tremie Pipe) Drilling Method: Hollow Stem Augers

Additional Information:

Attachments:

RECORD OF TEST Depth to Pump: _____ ft. below land surface

Test Date: _____ Pump Capacity: _____ gpm

PENDING APPROVAL

Static Water Level: 7.2 ft. below land surface

Pumping Water Level: _____ ft. below land surface

Water Level Measure Tool: M-Scope

Pumping Equipment: _____

Well Yield: _____ gpm

Total Design Head: _____ ft.

Pump Horsepower: _____

If pump tested Discharge Rate: _____ gpm

Duration of Test: _____ hours

Date Boring Decommissioned: _____

PUMPING EQUIPMENT AND ADDITIONAL INFORMATION

Installed: _____

Installer's Name: _____

Installer's Registration No.: _____

Pump Type: _____

Well Development Period: 4 hours

Method of Development: Pump & Surge

Protective Casing: Yes

Drilling Fluid: _____

Drill Rig: CME-750X

Health and Safety Plan: Yes

GEOLOGIC LOG

Depth to Top	Depth to Bottom	Color	USCS	Additional Description
0	11	Brown	SM - Silty sands, sand-silt mixtures	Cobbles & Brick
11	12	Brown	WR - Weathered Rock	Schist

PENDING APPROVAL

Service ID: 130134

This document has not yet been reviewed and approved or denied by the NJ DEP. Deficiencies in submittal information or actual construction may result in denial.

WELL RECORD SUBMITTAL PDF

PROPERTY OWNER: Matthew Brener

Organization: City of Trenton

Address: 319 E State Street, Trenton City (Mercer), New Jersey 08608

WELL LOCATION: Assunpink Creek

Address: 25 E Lafayette Street

County: Mercer Municipality: Trenton City Lot: 1 Block: 105

Easting(X): 418183 Northing(Y): 504535 Coordinate System: NJ State Plane (NAD83) - USFEET

Method: GPS Point of Reference: Well

GPS Manufacturer: Magellan Surveyor Name:

GPS Model: Mobile Mapper CX Surveyor License #:

Accuracy: 1 Accuracy units: Feet

WELL USE: Monitoring **DATE WELL STARTED:** 05/02/2011

Other Use(s): **DATE WELL COMPLETED:** 05/02/2011

WELL CONSTRUCTION

Permit Number Total Depth Drilled(ft): 15 Drilling Company:

E201103689 Finished Well Depth(ft): 14 Driller Name: Gerald Freck

Local ID: AC-4 Well was finished: Above Grade License No.: 490750

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating/Screen Slot # (lbs/sch no.)
Borehole(s)	0	15	8	N/A	N/A
Casing(s)	0	4	2	PVC	Sch 40
Screen(s)	4	14	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	2.5	8	2	2.5	48	4.5
Gravel Pack	0	2.5	8	2	#0/#00 Morie		

Grouting Method: Pressure method (Tremie Pipe) Drilling Method: Hollow Stem Augers

Additional Information:

Attachments:

RECORD OF TEST Depth to Pump: _____ ft. below land surface

Test Date: _____ Pump Capacity: _____ gpm

PENDING APPROVAL

Static Water Level: 7.1 ft. below land surface

Pumping Water Level: _____ ft. below land surface

Water Level Measure Tool: M-Scope

Pumping Equipment: _____

Well Yield: _____ gpm

Total Design Head: _____ ft.

Pump Horsepower: _____

If pump tested Discharge Rate: _____ gpm

Duration of Test: _____ hours

Date Boring Decommissioned: _____

PUMPING EQUIPMENT AND ADDITIONAL INFORMATION

Installed: _____

Installer's Name: _____

Installer's Registration No.: _____

Pump Type: _____

Well Development Period: 4 hours

Method of Development: Pump & Surge

Protective Casing: Yes

Drilling Fluid: _____

Drill Rig: CME-750X

Health and Safety Plan: Yes

GEOLOGIC LOG

Depth to Top	Depth to Bottom	Color	USCS	Additional Description
0	8	Brown	SM - Silty sands, sand-silt mixtures	Cobbles & Brick
8	12	Brown	SM - Silty sands, sand-silt mixtures	Some Gravel
12	15	Brown	WR - Weathered Rock	Schist

PENDING APPROVAL

APPENDIX C

Field Documentation

BORING LOG

WELL NO. AC-01

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	25.24
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	4/27/2011
DRILLING METHOD:	Hollow Stem Auger, Air Rotary	DATE FINISHED	4/27/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	PVC
DIA.	2"	---	2"

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-1	2.0'/ 1.0'	(0-10.5' bg) FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor		SM	Fill	0.0		
2		SS-2	2.0'/ 0.8'					0.0		
4		SS-3	2.0'/ 1.1'	...trace glass fragments at 4' bg				0.0		
6		SS-4	1.7'/ 1.3'					0.0		
8		SS-5	2.0'/ 1.0'	...slight chemical odor at 8' bg				0.0		
10										

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; bg - below grade
Location: Southeast of TP-01

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. **AC-01**

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-6	0.9'/ 0.7'	14.7 (10.5-10.9' bg) Weathered CONCRETE 14.3	10.5 10.9	SM CONCRETE		0.0 0.0 0.0 0.0		
				(10.9-12' bg) Augered to 12' bg. Auger has difficulty and grinds on material.		NR		0.0 NR NR NR		
12		SS-7	0.0'/ 0.0'	13.2 13.1 (12' bg) Crystalline rock, dry, white, black; No odor. Likely a boulder.	12.0	FILL		0.0		Final DTW at 12.10' bg
				(12.1-14' bg) Air Rotary drilling and augering methods used to drill to 14' bg.		NR		NR NR NR NR NR NR NR NR		Initial DTW estimated between 12 and 14' bg
14		SS-8	0.4'/ 0.4'	11.2 (14-14.4' bg) FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; Petroleum and sheen observed 10.8 10.7	14.0 14.4	SM FILL	Fill	0.0 3.9 2.1		
				(14.4-14.5' bg) Crystalline rock, dry, white, black; No odor. Likely a boulder.						
				(14.5-18' bg) Air rotary drilling to 18' bgs through boulders and concrete.		NR		NR NR NR NR NR NR NR NR NR NR NR NR		
16										
18		SS-9	2.0'/ 0.5'	7.2 (18-20' bg) FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; Petroleum odor and sheen observed.	18.0	SM		NR NR 2.3 1.6 1.1 0.9 2.1 2.3		Constructed 20' monitoring well: Well completed as a flushmount with lid and locking expandable gripper plug in PVC casing 2" diam. schedule 40 PVC riser: 0 - 7' bg; 2" diam. PVC 0.010" Slot Screen: 7-19.4' bg; Grout: 0-3' bg; Bentonite slurry seal: 3-4.5' bg; Morie #00 Filter Sand: 4.5-5' bg; Morie #0 Filter Sand: 5-20' bg; Sump: 19.4-20' bg.
20				5.2 End of Borehole at 20.0'.	20.0			2.3		
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. AC-02

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	20.4
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	5/3/2011
DRILLING METHOD:	Hollow Stem Auger	DATE FINISHED	5/3/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	PVC
DIA.	2"	---	2"

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	USCS Symbol	Stratum Change	Field Testing PID (ppm)	REMARKS
		SS-1	2.0'/ 0.8'	(0-8' bg) FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor	SM	Fill	0.0	
2		SS-2	2.0'/ 1.0'				0.0	
4		SS-3	2.0'/ 0.3'				0.0	
6		SS-4	2.0'/ 0.4'				0.0	Final DTW at 7.05' bg
8		SS-5	2.0'/ 1.1'	(8-16' bg) FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor			0.0	Initial DTW at 8.00' bg
10				10.4			0.0	

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; WH - Weight of Hammer ; bg - below grade
Location: Near TP-02
The 8.5" outer diameter auger (4.25" ID) could only be advanced to 14.5 ft bg.

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. AC-02

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-6	2.0'/ 0.1'					0.0		
12		SS-7	1.8'/ 1.3'			SM	Fill	0.0		Constructed 14.3' monitoring well in 8.5" diameter borehole: Well completed as a stickup with locking lid and expandable gripper plug in PVC casing 2" diam. schedule 40 PVC riser: 2' ag - 4' bg; 2" diam. PVC 0.010" Slot Screen: 4-14' bg; Grout: 0-2' bg; Bentonite slurry seal: 2-2.5' bg; Morie #00 Filter Sand:2.5-3.5' bg; Morie #0 Filter Sand: 3.5-14.3' bg; Sump: 14-14.3' bg. Backfill hole with Morie #00 Filter Sand: 14.3-18' bg
14		SS-8	2.0'/ 1.0'					0.0		
16		SS-9	2.0'/ 1.1'	4.4 (16-18' bg) Well-graded SAND and GRAVEL (SW): Wet, medium dense, moderate yellowish brown (10YR 5/4), fine to coarse SAND and fine to coarse, sub-rounded GRAVEL; No odor	16.0	SW	Sand	0.0		
18				2.4 End of Borehole at 18.0'.	18.0			0.0		
20										
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

O'BRIEN & GERE

BORING LOG

WELL NO. AC-03

PROJECT:	Assunpink Creek Restoration Project	JOB NO.	47289
CLIENT:	United States Army Corps of Engineers	GROUND ELEV.	19.4
INSPECTOR:	Stephen Scott	DATUM	NAVD 1988
DRILLING CONTRACTOR:	Uni-Tech Drilling	DATE STARTED	4/29/2011
DRILLER:	C. Lopez	DATE FINISHED	5/2/2011
PURPOSE:	Soil & Groundwater Investigation		
DRILLING METHOD:	Hollow Stem Auger		
DRILL RIG TYPE:	CME 750		

Sampling Methods: Standard Penetration Testing

	SAMPLE	CORE	CASING
TYPE	SS	---	PVC
DIA.	2"	---	2"

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	USCS Symbol	Stratum Change	REMARKS
0-2		SS-1	2.0'/ 1.3'	(0-7' bg) FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor	SM	Fill	
2-4		SS-2	2.0'/ 1.4'	...concrete in spoon tip at 2-4' bg; No odor			
4-6		SS-3	2.0'/ 1.5'				
6-8		SS-4	2.0'/ 0.4'	(7-9' bg) FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor			Initial DTW at 7.00' bg Final DTW at 7.20' bg
8-10		SS-5	1.9'/ 1.6'	...slight petroleum odor at 8-9' bg (9-11' bg) FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete. Strong petroleum odor, black, oily. Dye test results were negative for free product			Constructed 11.5'

Field Testing PID (ppm), 0 to 10 ft: 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1.7, 12.1, 35.6, 159, 153, 150, 88.2

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; WH - Weight of Hammer ; bg - below grade
Location: Adjacent to culvert and TP-03

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

O'BRIEN & GERE

WELL NO. **AC-03**

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-6	1.4'/ 0.4'	(0-7' bg) FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor *(continued)*		SM	Fill	10.7 85.6 87.9 45.4		monitoring well: Well completed as a stickup with locking lid and expandable gripper plug in PVC casing 2" diam. schedule 40 PVC riser: 2' ag - 4' bg; 2" diam. PVC 0.010" Slot Screen: 4-11.2' bg; Grout: 0-2' bg; Bentonite slurry seal: 2-2.5' bg; Morie #00 Filter Sand:2.5-3.5' bg; Morie #0 Filter Sand: 3.5-11.5' bg; Sump: 11.2-11.5' bg.
				8.4 (11-11.5' bg) SCHIST, wet, very dense, black, gray, green severly weathered from (11-11.25' bg) / slightly weathered (11.25-11.5' bg) Slight petroleum odor from 11.25-11.5' bg; no odor from 11.25-11.5'bg 7.9	11.0 11.5	SCHIST	BR	1.7 0.1 0		
12				Boring Terminated - Refusal at 11.5' bg End of Borehole at 11.5'.						
14										
16										
18										
20										
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. AC-04

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	20.2
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	5/2/2011
DRILLING METHOD:	Hollow Stem Auger	DATE FINISHED	5/2/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	PVC
DIA.	2"	---	2"

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-1	2.0'/ 1.3'	(0-7.5' bg) FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor		SM	Fill	0.0		
2		SS-2	2.0'/ 1.7'	... with slight chemical odor from 2.5 - 3' bg. No staining or odor (2.5-3 and 3-4' bg).				1.6, 48.8, 40.7, 10.8		
4		SS-3	2.0'/ 0.9'							
6		SS-4	2.0'/ 0.7'							Final DTW at 7.10' bg
				12.7 (7.5-8' bg) FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor	7.5	SM				Initial DTW at 7.5' bg
8		SS-5	2.0'/ 1.1'	12.2 (8-12' bg): Well-Graded SAND with SILT and GRAVEL (SW-SM), wet, medium dense, medium yellowish brown (10YR 5/4), fine to medium SAND and fine to coarse, sub-rounded, GRAVEL with some SILT; No odor. Appears to be native material	8.0	SW-SM	Sand			
10										

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; bg - below grade
Location: Near TP-08 and TP-09

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. AC-04

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-6	2.0'/ 1.4'	(8-12' bg): Well-Graded SAND with SILT and GRAVEL (SW-SM), wet, medium dense, medium yellowish brown (10YR 5/4), fine to medium SAND and fine to coarse, sub-rounded, GRAVEL with some SILT; No odor. Appears to be native material *(continued)*		SW-SM	Sand	0.0		
12				8.2	12.0					
		SS-7	1.8'/ 1.3'	(12-12.5' bg): SCHIST, wet to moist, severely weathered; No odor (12.5-15.25' bg) SCHIST, moist, weathered, black, green, gray severely weathered. Quartz seams from 14-15'bg		SCHIST	Bedrock	0.0		Constructed 14.3' monitoring well: Well completed as a stickup with locking lid and expandable gripper plug in PVC casing 2" diam. schedule 40 PVC riser: 2' ag - 4' bg; 2" diam. PVC 0.010" Slot Screen: 4-14' bg; Grout: 0-2' bg; Bentonite slurry seal: 2-2.5' bg; Morie #00 Filter Sand:2.5-3.5' bg; Morie #0 Filter Sand: 3.5-14.3' bg; Sump: 14-14.3' bg. Backfill hole with Morie #00 Filter Sand: 14.3-15.25' bg
14		SS-8	0.9'/ 0.6'					0.0		
		SS-9	0.3'/ 0.3'	5.0	15.3			0.0		
				End of Borehole at 15.3'.				0.0		
16										
18										
20										
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-01

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	25.12
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	4/26/2011
DRILLING METHOD:	Hollow Stem Auger	DATE FINISHED	4/26/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
				(0-12' bg) FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor		SM	Fill	0.0		
2			4.0'/ 4.0'							
4		SS-1	2.0'/ 1.3'							
6		SS-2	2.0'/ 1.0'							
8		SS-3	2.0'/ 1.3'							
10										

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; NM - Not Measured ; bg - below grade
Location: Near intersection of Assunpink Dr. and S. Warren Street, northwest of SB-02
*Soft dig from 0-4 ft bg; Borehole grouted on 4/27/11

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-01

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-4	2.0'/ 1.0'	(0-12' bg) FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor *(continued)*		SM	Fill	0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0		
12		SS-5	2.0'/ 0.3'	(12-19.5' bg) FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; Petroleum odor present from 12-16' bg				0.0, 0.0, 0.3, NM, 0.3, NM, 0.5, NM		Initial DTW at 12.00' bg Final DTW at 12.11' bg
14		SS-6	2.0'/ 0.3'					0.7, 0.9, 3.3, 3.0, 1.4, 1.2, 1.1, 0.9		
16		SS-7	2.0'/ 1.0'	...petroleum odor absent and creosote odor present from 16-19.5' bg				0.8, 0.7, 0.1, 0.0, 0.0, 0.0, 0.0, 0.0		
18		SS-8	1.9'/ 1.3'					0.0, 0.0, 0.0, 0.0, 0.0, 0.0		
				5.6 (19.5-19.9' bg) SCHIST, wet, green, black, white, severely weathered; No odor 5.2 (19.9)		SCHIST	Bedrock	0.0, 0.0		
20				Boring Terminated - Refusal at 19.9' bg End of Borehole at 19.9'.						
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-02

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	25.34
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	4/26/2011
DRILLING METHOD:	Hollow Stem Auger	DATE FINISHED	4/26/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
				(0-11' bg) FILL: Silty SAND with GRAVEL (SM): Moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT with some fine to coarse gravel, cobbles, asphalt, brick fragments, concrete fragments (up to 1" diameter, angular); No odor				0.0		
2			4.0'/ 4.0'					0.0		
4		SS-1	2.0'/ 0.3'			SM	Fill	0.0		
6		SS-2	2.0'/ 0.7'	... Arkosic sandstone cobble from 7-8' bg				0.0		
8		SS-3	2.0'/ 0.1'					0.0		
10								0.0		

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; bg - below grade
Location: Near intersection of Assunpink Dr. and S. Warren Street, southeast of SB-01
*Soft dig from 0-4 ft bg; Borehole grouted on 4/27/11

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

O'BRIEN & GERE

WELL NO. **SB-02**

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-4	2.0'/ 1.1'	(0-11' bg) FILL: Silty SAND with GRAVEL (SM): Moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT with some fine to coarse gravel, cobbles, asphalt, brick fragments, concrete fragments (up to 1" diameter, angular); No odor *(continued)*	11.0	SM	Fill	0.0 0.0 0.0 0.0		
12				(11-12') FILL: SILT (ML), moist, stiff, moderate yellowish brown (10YR 3/4), SILT with trace fine gravel, coal fragments, brick fragments; No odor	12.0	ML		0.0 0.0 0.0 0.0		Intial DTW at 12' bg Final DTW at 12.05' bg
14		SS-5	2.0'/ 0.4'	(12-14') FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT with some fine to coarse gravel, cobbles, asphalt, brick fragments, concrete fragments (up to 1" diameter, angular); No odor	14.0	SM		0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		
16		SS-6	2.0'/ 0.3'	(14-16') MUDSTONE, wet, dark reddish brown (10YR 3/4), weathered shaley MUDSTONE (boulder)	16.0	MUDSTONE		0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		
18		SS-7	2.0'/ 0.0'	(16-18') No Recovery	18.0		No Recovery	0.0 NR NR NR NR NR NR NR		
20		SS-8	2.0'/ 1.7'	(18-20') FILL: Silty SAND with GRAVEL (SM): Wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT with some fine to coarse gravel, cobbles, asphalt, brick fragments, concrete fragments (up to 1" diameter, angular); Slight creosote odor from 18-20' bg	20.0	SM	Fill	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		
				End of Borehole at 20.0'.				0.0		
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-03

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	25.36
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	4/26/2011
DRILLING METHOD:	Hollow Stem Auger	DATE FINISHED	4/26/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
				(0-9') FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), medium to fine SAND and SILT, some fine to coarse GRAVEL, cobbles, brick fragments and concrete fragments; No odor		SM	Fill	0.0		
2			4.0'/ 4.0'					0.0		
4		SS-1	2.0'/ 1.3'					0.0		
6		SS-2	2.0'/ 0.1'					0.0		
8		SS-3	2.0'/ 1.0'	...Arkosic sandstone cobble				0.0		
				16.4 (9-12') FILL: Silty SAND (SM), very moist, grayish brown (5 YR 5/2), fine to medium SAND and SILT, trace fine gravel, coal fragments; No odor	9.0	SM		0.0		
10								0.0		

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; bg - below grade
Location: Near intersection of Assunpink Dr. and S. Warren Street, southwest of SB-02
*Soft dig from 0-4 ft bg; Borehole grouted on 4/29/11

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-03

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-4	2.0'/ 1.0'	(9-12') FILL: Silty SAND (SM), very moist, grayish brown (5 YR 5/2), fine to medium SAND and SILT, trace fine gravel, coal fragments; No odor *(continued)*		SM	Fill	0.0		
12		SS-5	2.0'/ 0.7'	(12-13') FILL: Silty SAND (SM), wet, grayish brown (5 YR 5/2), fine to medium SAND and SILT, trace fine gravel, coal fragments; No odor				0.0		Initial DTW at 12.00' bg Final DTW at 12.21' bg
14		SS-6	2.0'/ 1.1'	12.4 (13-19') SCHIST, wet, black, green, white, foliated, highly weathered evident biotite and muscovite; No odor	13.0	SCHIST	Bedrock	0.0		
16		SS-7	2.0'/ 1.3'					0.0		
18		SS-8	1.3'/ 0.7'					0.0		
20				16.1 (19-19.3') SCHIST, wet, black, green, white, slightly weathered SCHIST with evident biotite, muscovite, and chlorite; No odor Boring Terminated - Refusal at 19.3' bg End of Borehole at 19.3'.	19.3			0.0		
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-04

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	20.17
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	5/5/2011
DRILLING METHOD:	Hollow Stem Auger	DATE FINISHED	5/5/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-1	2.0'/ 1.1'	(0-7.5') FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor		SM	Fill	0.0		
2		SS-2	2.0'/ 1.2'					0.0		
4		SS-3	2.0'/ 1.3'					0.0		
6		SS-4	2.0'/ 0.5'					0.0		
				12.7	7.5					Final DTW at 7.45' bg Initial DTW at 7.50' bg
8		SS-5	2.0'/ '	(7.5-17.5') FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor		SM		0.0		
10								0.0		

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; bg - below grade
Location: South side of culvert mid-point, between AC-02 and AC-03
Borehole grouted on 5/5/11

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

O'BRIEN & GERE

WELL NO. **SB-04**

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-6	2.0'/ 0.2'	(7.5-17.5') FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor *(continued)*		SM	Fill	0.0		
12		SS-7	1.4'/ 1.3'					0.0		
14		SS-8	1.4'/ 1.3'					NR		
16		SS-9	1.9'/ 1.7'					NR		
2.7				(17.5-18') SCHIST, moist, green, black, gray, severely weathered; No odor	17.5	SCHIST	BR	0.0		
18				Boring Terminated - Refusal at 18' bg End of Borehole at 18.0'.	18.0			0.0		
20										
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-05

PROJECT:	Assunpink Creek Restoration Project	SHEET 1 OF 2	
CLIENT:	United States Army Corps of Engineers		
INSPECTOR:	Stephen Scott	JOB NO.	47289
DRILLING CONTRACTOR:	Uni-Tech Drilling — Sampling Methods: Standard Penetration Testing	GROUND ELEV.	19.75
DRILLER:	C. Lopez	DATUM	NAVD 1988
PURPOSE:	Soil & Groundwater Investigation	DATE STARTED	5/5/2011
DRILLING METHOD:	Hollow Stem Auger	DATE FINISHED	5/5/2011
DRILL RIG TYPE:	CME 750		

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-1	2.0'/ 0.8'	(0-7.5') FILL: Silty SAND with GRAVEL (SM), moist, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor		SM	Fill	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		
2		SS-2	0.4'/ 0.3'	(2-2.4') CONCRETE: Spoon refusal on moist CONCRETE containing quartzite cobbles; No odor				0.0 0.0 NR NR NR NR NR NR		
4		SS-3	2.0'/ 1.4'	... quartzite cobble in spoon tip at 4' bg				NR 0.0 0.0 0.0 0.0 0.0 0.0 0.0		
6		SS-4	2.0'/ 1.1'					0.0 0.0 0.0 0.0 0.0 0.0		
			12.3		7.5					Initial DTW at 7.50' bg
8		SS-5	2.0'/ 0.5'	(0-7.5') FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor		SM		0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		Final DTW at 7.80' bg
10										

Notes: NR - No Recovery ; NA - Not Available ; DTW - Depth to Water ; bg - below grade
Location: Adjacent to culvert mid-point, between TP-07 & AC-03
Borehole grouted on 5/5/11

(Continued Next Page)

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

BORING LOG

WELL NO. SB-05

PROJECT: Assunpink Creek Restoration Project
CLIENT: United States Army Corps of Engineers
INSPECTOR: Stephen Scott

SHEET 2 OF 2

JOB NO. 47289

DEPTH (ft)	Sample Type	Number	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	USCS Symbol	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-6	0.3'/ 0.2'	(0-7.5') FILL: Silty SAND with GRAVEL (SM), wet, medium dense, pale yellowish brown (10YR 6/2), fine SAND and SILT, some fine to coarse GRAVEL with cobbles, little brick and concrete; No odor *(continued)*		SM	Fill	0.0		
				... quartzite cobble in spoon tip at 10-10.25' bg				0.0		
								0.0		
								0.0		
								NR		
								NR		
								NR		
								NR		
12								NR		
		SS-7	1.3'/ '	...sandstone boulder at 12.5' bg. Wet, saprolitic to weathered, arkosic, medium to coarse grained SANDSTONE BOULDER; No odor				0.0		
								0.0		
								0.0		
								0.0		
								0.0		
								0.0		
14								NR		
								NR		
								0.0		
								0.0		
								0.0		
		SS-8	2.0'/ 1.5'	4.8 (15-17') SCHIST, moist, brown, yellow, severely weathered SCHIST with rock fabric visible; No odor	15.0	SCHIST	Bedrock	0.0		
								0.0		
								0.0		
								0.0		
16								0.0		
		SS-9	1.3'/ 0.8'					0.0		
								0.0		
								0.0		
				2.5 (17-17.3') SCHIST, moist, yellow, brown, gray, slightly weathered SCHIST; No odor	17.3			0.0		
				Boring Terminated - Refusal at 17.3' bg				NR		
				End of Borehole at 17.3'.						
18										
20										
22										

Report Name: NEW OBG BORING LOG Data Template: OBG GINT STD US.GDT

O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID: AC-01

Date	5/5/2011	Field Personnel	MPM	Weather	Sunny/mild
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton,NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	20.00	ft.	Date(s) Installed	4/27/2011		Date(s) Developed	5/5/2011
Depth to Bottom (Final)*	20.02	ft.	Driller	Uni-Tech		Development Time	800
Depth to Water (Initial)*	12.00	ft.	Well Diameter	2	in.		1200
Depth to Water (Final)*	dry	ft.	Casing Volume	1.30	gal.		4 hrs

* Measuring point TOC Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
800	0	WATER TOO TURBID FOR HORIBA READINGS							13.70	gray/brown
802	3	off							dry	
804	3	off							14.52	
808	3	off							13.30	
810	3	on							13.24	
811	5	WATER TOO TURBID FOR HORIBA READINGS							dry	
900	10	11.72	12.06	7.90	4.25	out	313	2	13.00	gray/brown
901	12	off							dry	
932	20	18.51	4.12	5.89	1.74	746	56	2	13.00	gray/brown
933	24								dry	
941	24	16.33	2.56	7.16	2.1	704	-60	2	13.00	gray/brown
942	26								dry	
953	26	16.63	3.18	7.22	2.09		-74	2	13.00	cloudy
954	28	off							dry	
1002	28	16.91	1013	7.67	1.98	845	60	2	13.00	
1003	30	off							dry	
1013	30								dry	
1014	32								dry	

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 32 gallons

Physical appearance at start		Physical appearance at end	
Color	gray/brown	Color	cloudy
Odor	petroleum	Odor	no
Sheen/Free Product	no	Sheen/Free Product	no

NOTES:

Well surged with swab regularly between pumping
Well recovers to 90% in about 10 minutes, then pumps for <1 minute
Recovery time down to 8 minutes after 0915

PID = 0.0ppm

O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID: AC-01

Date	5/5/2011	Field Personnel	MPM	Weather	Sunny/mild
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton,NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	20.00	ft.	Date(s) Installed	4/27/2011		Date(s) Developed	5/5/2011
Depth to Bottom (Final)*	20.02	ft.	Driller	Uni-Tech		Development Time	800
Depth to Water (Initial)*	12.00	ft.	Well Diameter	2	in.		1200
Depth to Water (Final)*	dry	ft.	Casing Volume	1.30	gal.		4 hrs

* Measuring point TOC Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
1023	32	16.01	10.13	7.07	1.98	out	60	2	13.00	brown
1024	34	off							dry	
1033	34	18.49	7.99	7.97	0.001	out	52	2	13.00	
1034	36								dry	
1043	36	17.17	7.77	7.77	1.95	540	-14	2	13.00	brown
1044	38	off							dry	
1054	38	17.17	7.76	7.71	2.1	645	-73	2	13.00	
1055	40	off							dry	
1104	40	15.82	11.37	7.14	1.28	650	14	2	13.00	
1105	42	off							dry	
1114	42	16.44	7.69	7.58	0.958	640	-72	2	13.00	
1115	44	off							dry	
1125	44	19.11	7.88	7.86	1.88	377	-74	2	13.00	cloudy/brown
1126	46	off							dry	
1134	46	19.04	3.41	7.88	1.78	350	-72	2	13.00	
1135	off								13.00	
1145	50	16.81	4.49	7.87	1.88	300	-74	2	13.00	
1155	52	17.14	3.99	7.88	1.88	280	-73	2	13.00	
1205	54	18.55	11.98	7.86	1.21	166	-80	2	13	

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 54 gallons

Physical appearance at start		Physical appearance at end	
Color	brown	Color	cloudy
Odor	no	Odor	no
Sheen/Free Product	no	Sheen/Free Product	no

NOTES:

Well surged with swab regularly between pumping
Well recovers to 90% in about 10 minutes, then pumps for <1 minute
Recovery time down to 8 minutes after 0915

PID = 0.0ppm

O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID:AC-02

Date	5/5/2011	Field Personnel	MPM	Weather	Sunny/mild
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton,NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	16.59	ft.	Date(s) Installed	4/27/2011		Date(s) Developed	5/5/2011
Depth to Bottom (Final)*	16.65	ft.	Driller	Uni-Tech		Development Time	Start: 1200
Depth to Water (Initial)*	9.6	ft.	Well Diameter	2	in.		Stop: 1600
Depth to Water (Final)*	Dry	ft.	Casing Volume	1.14	gal.		Total: 4 hrs

* Measuring point TOC (final) Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
1159	0		WATER TOO TURBID FOR HORIBA READINGS					2	15.41	black
1200	3	off							dry	
1205	3	off						2	10.00	
1210	3		WATER TOO TURBID FOR HORIBA READINGS						9.85	black
1211	5	off						2		
1221	5		WATER TOO TURBID FOR HORIBA READINGS						9.85	black
1222	7	off								
1232	7		WATER TOO TURBID FOR HORIBA READINGS					2	10.00	black
1233	9	off							dry	
1242	9		WATER TOO TURBID FOR HORIBA READINGS					2	10.00	black
1243	11	off							dry	
1253	11	20.4	20.89	7.89	2.86	800	-163	2	10.00	gray
1254	13	off							dry	
1303	13	NM						2	10.00	gray
1304	15	off							dry	
1313	15	20.11	10.11	7.42	2.44	800	-155	2	10.01	
1314	17	off							dry	
1323	17	19.89	14.11	7.68	2.55	800	-108	2	10.04	
1324	19	off							dry	

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 19 gallons

Physical appearance at start		Physical appearance at end	
Color	black	Color	cloudy
Odor	no	Odor	no
Sheen/Free Product	no	Sheen/Free Product	no

NOTES: Well surged with swab regularly between pumping

PID = 0.0ppm

O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID:AC-02

Date	5/5/2011	Field Personnel	MPM	Weather	Sunny/mild
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton,NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	16.59	ft.	Date(s) Installed	4/27/2011		Date(s) Developed	5/5/2011
Depth to Bottom (Final)*	16.65	ft.	Driller	Uni-Tech		Development Time	Start: 1200
Depth to Water (Initial)*	9.6	ft.	Well Diameter	2	in.		Stop: 1600
Depth to Water (Final)*	Dry	ft.	Casing Volume	1.14	gal.		Total: 4 hrs

* Measuring point TOC (final) Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
1338	19	NM						2	9.80	
1339	21	off						off	dry	
1346	21	21.92	18.72	6.79	1.38	238	82	2	10.05	gray
1347	23	off							dry	
1355	23	NM								
1356	25	off								
1407	25	17.05	17.05	8.16	2.79	800	-148	2	10.10	gray
1408	27	off							dry	
1416	27	NM							10.20	
1417	29	off							dry	
1426	29	18.81	5.19	7.59	1.66	800	52	2	10.20	
1427	31	off							dry	
1435	31	NM							10.20	
1436	33	off							dry	
1447	33	19.23	3.9	7.71	2.71	800	-75	2	10.20	
1448	35								dry	
1458	37	19.24	5.79	7.31	2.29	800	-63	2	10.20	
1508	37	NM							10.20	cloudy
1509	39	off							10.2	

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 19 gallons

Physical appearance at start		Physical appearance at end	
Color	black	Color	cloudy
Odor	no	Odor	no
Sheen/Free Product	no	Sheen/Free Product	no

NOTES: Well surged with swab regularly between pumping

PID = 0.0ppm

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O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID:AC-02

Date	5/5/2011	Field Personnel	MPM	Weather	Sunny/mild
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton,NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	16.59	ft.	Date(s) Installed	4/27/2011		Date(s) Developed	5/5/2011
Depth to Bottom (Final)*	16.65	ft.	Driller	Uni-Tech		Development Time	Start: 1200
Depth to Water (Initial)*	9.6	ft.	Well Diameter	2	in.		Stop: 1600
Depth to Water (Final)*	Dry	ft.	Casing Volume	1.14	gal.		Total: 4 hrs

* Measuring point TOC (final) Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
1518	39	19.24	6.04	7.29	2.21	600	-63	2	10.20	cloudy
1519	41	off								
1527	41	NM								
1528	43	off								
1537	43	19.24	5.65	7.25	2.22	550	-64	2	10.20	cloudy
1538	45	off								
1536	45	NM								
1537	47	off								
1546	47	19.24	6.89	7.33	2.35	550	-63	2	10.20	cloudy
1547	49	off								
1556	49	19.24	5.64	7.35	2.29	500	-68	2	10.20	cloudy
1557	51	off								

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 51

Physical appearance at start		Physical appearance at end	
Color	black	Color	cloudy
Odor	no	Odor	no
Sheen/Free Product	no	Sheen/Free Product	no

NOTES: Well surged with swab regularly between pumping

PID = 0.0ppm

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O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID: AC-03

Date	5/4/2011	Field Personnel	MPM	Weather	Rain/cool
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton, NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	13.55	ft. bTOC	Date(s) Installed	4/29/2011		Date(s) Developed	5/4/2011
Depth to Bottom (Final)*	13.6	ft.	Driller	Uni-Tech		Development Time	Start: 0800
Depth to Water (Initial)*	10.15	ft. bTOC	Well Diameter	2	in.		Stop:1200
Depth to Water (Final)*	dry	ft.	Casing Volume	0.55	gal. (water column)		Total: 4 hrs

* Measuring point TOC- 3.09 Ag

Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
808	0	13.96	14.26	6.92	2.09	800	-49	2	11.19	black
810	~5	dry							dry	
814	-								10.98	
822	-								10.39	
824	on	16.14	4.03	7.56	1.69	626	-90	2	11.41	black
826	~7	dry							dry	
836	on								10.51	
837	~9	15.44	12.95	7.66	2	800	-107	2	dry	black
844	on									
845	~10	15.49	4.99	7.61	2.1	654	-101	2	dry	black
851									11.41	
901	on	15.34	6.71	7.59	1.73	740	-101	2		black
902	~12								dry	
904	on								11.50	
905	~14	15.44	6.34	7.68	1.78	594	-107	2	dry	black
915	on	15.48	6.48	7.70	1.68	585	-109	2	10.50	
916	~16								dry	
925	on	13.29	17.84	7.86	2.13	550	-115	2	10.51	black
926	~18								dry	

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 40 gallons

Physical appearance at start		Physical appearance at end	
Color	black	Color	
Odor	petroleum	Odor	petroleum
Sheen/Free Product	sheen	Sheen/Free Product	sheen

NOTES: Well surged with swab regularly between pumping

PID Well Head = 4.4ppm

O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID: AC-03

Date	5/4/2011	Field Personnel	MPM	Weather	Rain/cool
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton, NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	13.55	ft. bTOC	Date(s) Installed	4/29/2011		Date(s) Developed	5/4/2011
Depth to Bottom (Final)*	13.6	ft.	Driller	Uni-Tech		Development Time	Start: 0800
Depth to Water (Initial)*	10.15	ft. bTOC	Well Diameter	2	in.		Stop:1200
Depth to Water (Final)*	dry	ft.	Casing Volume	0.55	gal. (water column)		Total: 4 hrs

* Measuring point TOC- 3.09 Ag Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
935		13.99	3.55	8.03	2.04	450	-121	2	10.51	gray
936	~20								dry	
950	on	12.02	14.38	8.04	2.2	800	-144	2	10.48	black
951	~22								dry	
1111	~30	13.48	13.41	7.91	2.01	766	-104	2	10.57	black
1112									dry	
1121	~32									
1122										
1131										
1141	~36									
1151	~38									
1201	~40	16.04	8.04	7.89	0.889	650	-109	2	dry	gray

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 40 gallons

Physical appearance at start		Physical appearance at end	
Color	black	Color	gray
Odor	petroleum	Odor	petroleum
Sheen/Free Product	sheen	Sheen/Free Product	sheen

NOTES: Well surged with swab regularly between pumping

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O'BRIEN & GERE ENGINEERS, INC.

Well Development Log

WELL ID: AC-04

Date	5/4/2011	Field Personnel	MPM	Weather	Rain/cool
Site Name	Assunpink	Contractor	Uni-Tech	Well Type	2" PVC
Site Location	Trenton, NJ	Evacuation Method	2" Submersible Grundphos	Project No.	47289

Well information:

Depth to Bottom (Initial) *	15.31	ft.	Date(s) Installed	5/2/2011		Date(s) Developed	5/4/2011
Depth to Bottom (Final)*	15.38	ft.	Driller	Uni-Tech		Development Time	Start: 1202
Depth to Water (Initial)*	10.72	ft.	Well Diameter	2	in.		Stop: 1602
Depth to Water (Final)*	Dry	ft.	Casing Volume	0.75	gal.		Total: 4hrs

* Measuring point TOC Pump setting* (intake) varies ft.

Elapsed Time	Volume of Water Removed (Gallons)	Temp-erature °C	Diss. Oxygen mg/L	pH s.u	Conductivity mS/cm	Turbidity (NTU)	ORP mV	Approx. Flow Rate (gal/min)	Depth to Water (ft.)	Appearance of Water
1200	0	WATER TOO TURBID FOR HORIBA READINGS						2	12.32	brown
1202	4	off							DRY	
1205	4								10.77	brown
1205	6	WATER TOO TURBID FOR HORIBA READINGS							DRY	
1206	off								12.72	
1207									10.91	
1231	16	16.32	14.34	8.12	1.2	800	88	2	DRY	brown
1300	30	15.98	15.67	8.14	1.41	440	98	2	10.72	cloudy
1330	40	16.31	14.49	8.14	1.3	250	104	2	DRY	cloudy
1400	50	16.13	13.03	7.51	1.16	545	110	2	DRY	cloudy
1430		16.33	10.43	7.88	0.864	304	110	2	DRY	cloudy
1500	70	16.29	7.14	7.90	0.878	277	112	2	DRY	cloudy
1530	80	16.33	7.98	7.91	0.888	250	108	2	DRY	cloudy
1600	90	16.46	7.99	7.91	0.787	211	109	2	DRY	cloudy

Note: Following development use the extra rows in the table above to monitor the ground water recovery, if possible to within 10% of initial DTW

Development Water Characteristics:

Total volume of Development water removed: 90 gallons

Physical appearance at start		Physical appearance at end	
Color	brown (thick sediment)	Color	cloudy
Odor	sl. Petroleum	Odor	no
Sheen/Free Product	no	Sheen/Free Product	no

NOTES: Well surged with swab regularly between pumping

PID = 0.0ppm

O'BRIEN & GERE ENGINEERS, INC

USACE Low Flow Ground Water Sampling Field Log

Monitoring Well - **AC-01**

Assunpink Creek Restoration
Trenton, NJ

Northing - **504224.8468** Easting - **417984.2026**
Permit Number - **E201103686**

Sampling Information

Date - **05/23/11**
OBG Personnel - **MPM / BAD**
Weather - **Overcast**

Evacuation Equipment - **2-in. dia. Grundfos submersible**
Sample Equipment - **$^1/_4$-in. dia. Teflon tubing**

Well / Ground Water Measurements

Depth to Water - **12.30** ft bTOC
Well Depth - **20.02** ft bTOC
Screen Interval - **7-20** ft bTOC

Top of Casing Elevation - **24.90** ft MSL
Water table elevation - **12.60** ft MSL
Depth to Pump Intake - **16** ft bTOC

Well Evacuation Data

Stabilization Criteria			± 3 %	± 0.1 SU	± 10mV	± 3 %	< 40 NTU	10%	< 0.3 ft	
Time	**Rate** mL/min	**Vol.** L	**temp** C	**pH** Std	**ORP** mV	**Cond** mS/cm	**turb** NTU	**DO** mg/L	**DTW** ft	**Comments**
1107	-	0.0	20.52	4.79	311	0.001	126.0	9.86	12.36	
1112	*400*	2.0	13.86	7.02	-94	1.91	221.0	1.16	12.40	
1117	*400*	4.0	13.89	7.02	-98	1.90	56.7	0.96	12.42	
1122	*400*	6.0	13.73	7.04	-117	1.89	23.0	0.76	12.41	
1127	*400*	8.0	13.69	7.02	-119	1.89	11.7	0.71	12.41	
1132	*400*	10.0	13.65	7.03	-122	1.89	7.3	0.68	12.41	
1137	*400*	12.0	13.71	7.03	-123	1.88	4.4	0.64	12.41	
1142	*400*	14.0	13.66	7.02	-124	1.88	3.5	0.62	12.41	
1147	*400*	16.0	13.69	7.02	-125	1.88	2.1	0.62	12.41	
1152	*400*	18.0	13.69	7.02	-126	1.88	1.9	0.59	12.41	
1157	***SAMPLE***	--	13.69	7.02	-127	1.88	1.9	0.59	12.41	
							DO Kit	NM	**Fe^{2+} Kit**	NM

Notes / Sample Information

Sample Name - **AC-01/DUP052311**

Appearance at start - **Brown/cloudy**
Appearance after purging - **Clear**

QC Sample - **DUP**
Odor - **No**

DTW after purging - **12.41** ft bTOC
DTW at time of sampling - **12.41** ft bTOC

Total Volume Purged - **18** liters
Purge Rate - **400** mL/min

Analysis - TCL VOCs; TCL SVOCs; TCL Pesticides; TCL Herbicides ; TCL PCBs
TAL Metals (including Hg); Oil and Grease; 2,3,7,8 Tetrachloro-p-dioxin; TSS; BOD

Sample Time - **1157**

Notes / Other Observations -

O'BRIEN & GERE ENGINEERS, INC

USACE Low Flow Ground Water Sampling Field Log

Monitoring Well - **AC-02**

Assunpink Creek Restoration
Trenton, NJ

Northing - **504287.2659** Easting - **418039.0697**
Permit Number - **E201103687**

Sampling Information

Date - **05/23/11**
OBG Personnel - **MPM / BAD**
Weather - **Overcast**

Evacuation Equipment - **2-in. dia. Grundfos submersible**
Sample Equipment - **$^1/_4$-in. dia. Teflon tubing**

Well / Ground Water Measurements

Depth to Water - **9.79** ft bTOC
Well Depth - **16.65** ft bTOC
Screen Interval - **6.5-16.5** ft bTOC

Top of Casing Elevation - **22.71** ft MSL
Water table elevation - **12.92** ft MSL
Depth to Pump Intake - **13** ft bTOC

Well Evacuation Data

Stabilization Criteria			± 3 %	± 0.1 SU	± 10mV	± 3 %	< 40 NTU	10%	< 0.3 ft	
Time	**Rate** mL/min	**Vol.** L	**temp** C	**pH** Std	**ORP** mV	**Cond** mS/cm	**turb** NTU	**DO** mg/L	**DTW** ft	**Comments**
1322	-	0.0	14.17	7.12	-89.0	2.57	195.0	1.10	10.45	
1327	*500*	2.5	14.19	7.13	-97.0	2.57	55.0	0.86	10.19	
1332	*400*	4.5	14.12	7.13	-103.0	2.57	30.6	0.77	10.09	
1337	*400*	6.5	14.16	7.12	-105.0	2.57	9.1	0.74	10.09	
1342	*400*	8.5	13.88	7.12	-106.0	2.56	5.8	0.66	10.09	
1347	*400*	10.5	13.84	7.12	-106.0	2.57	4.2	0.62	10.09	
1352	*400*	12.5	13.74	7.12	-105.0	2.57	2.6	0.56	10.09	
1357	*400*	14.5	13.77	7.12	-105.0	2.57	3.6	0.54	10.09	
1402	*400*	16.5	13.77	7.11	-104.0	2.57	1.5	0.51	10.09	
1407	*400*	18.5	13.78	7.11	-104.0	2.57	1.0	0.49	10.09	
1412	*400*	20.5	13.78	7.11	-104.0	2.57	1.0	0.49	10.09	
1413	***SAMPLE***	--	13.78	7.12	-104.0	2.57	0.6	0.49	10.09	
							DO Kit	NM	**Fe^{2+} Kit**	NM

Notes / Sample Information

Sample Name - **AC-02**

Appearance at start - **Cloudy/brown**
Appearance after purging - **Clear**

QC Sample - **None**
Odor - **No**

DTW after purging - **10.09** ft bTOC
DTW at time of sampling - **10.09** ft bTOC

Total Volume Purged - **20.5** liters
Purge Rate - **400** mL/min

Analysis - TCL VOCs; TCL SVOCs; TCL Pesticides; TCL Herbicides ; TCL PCBs
TAL Metals (including Hg); Oil and Grease; 2,3,7,8 Tetrachloro-p-dioxin; TSS; BOD

Sample Time - **1413**

Notes / Other Observations -

O'BRIEN & GERE ENGINEERS, INC

USACE Low Flow Ground Water Sampling Field Log

Monitoring Well - **AC-03**

Assunpink Creek Restoration
Trenton, NJ

Northing - **504410.6425** Easting - **418159.5554**
Permit Number - **E201103688**

Sampling Information

Date - **05/23/11**
OBG Personnel - **MPM / BAD**
Weather - **Overcast**

Evacuation Equipment - **2-in. dia. Grundfos submersible**
Sample Equipment - **1/4-in. dia. Teflon tubing**

Well / Ground Water Measurements

Depth to Water - **10.62** ft bTOC
Well Depth - **13.55** ft bTOC
Screen Interval - **6.5-13.5** ft bTOC

Top of Casing Elevation - **22.17** ft MSL
Water table elevation - **11.55** ft MSL
Depth to Pump Intake - **12** ft bTOC

Well Evacuation Data

Stabilization Criteria			± 3 %	± 0.1 SU	± 10mV	± 3 %	< 40 NTU	10%	< 0.3 ft	
Time	**Rate** mL/min	**Vol.** L	**temp** C	**pH** Std	**ORP** mV	**Cond** mS/cm	**turb** NTU	**DO** mg/L	**DTW** ft	**Comments**
1331	-	0.0	14.97	7.15	-152.0	1.98	147	2.19	10.63	
1336	*300*	1.5	14.99	7.15	-155.0	1.98	28.5	1.59	10.63	
1341	*300*	3.0	14.31	7.15	-157.0	2.00	4.5	1.20	10.73	
1346	*300*	4.5	14.14	7.13	-158.0	2.01	1.9	0.80	10.71	
1351	*300*	6.0	14.50	7.13	-159.0	2.00	1.2	0.78	10.63	
1356	*300*	7.5	14.55	7.11	-159.0	2.01	0.9	0.67	10.68	
1401	*300*	9.0	14.54	7.11	-159.0	2.01	0.9	0.67	10.68	
1406	*300*	10.5	14.00	7.09	-160.0	2.00	0.4	0.88	10.61	
1411	*300*	12.0	14.83	7.09	-161.0	2.00	0.4	0.66	10.55	
1416	*300*	13.5	15.31	7.07	-160.0	1.99	0.3	0.49	10.52	
1421	*300*	15.0	15.26	7.14	-164.0	1.99	0.5	0.50	10.74	
1426	*300*	16.5	15.21	7.13	-163.0	2.00	0.6	0.50	10.79	
1431	***SAMPLE***	--	15.23	7.13	-163.0	2.00	0.6	0.51	10.79	
							DO Kit	NM	**Fe^{2+} Kit**	NM

Notes / Sample Information

Sample Name - **AC-03**

Appearance at start - **Cloudy/gray**
Appearance after purging - **Clear**

QC Sample - **None**
Odor - **No**

DTW after purging - **10.79** ft bTOC
DTW at time of sampling - **10.79** ft bTOC

Total Volume Purged - **16.5** liters
Purge Rate - **300** mL/min

Analysis - TCL VOCs; TCL SVOCs; TCL Pesticides; TCL Herbicides ; TCL PCBs
TAL Metals (including Hg); Oil and Grease; 2,3,7,8 Tetrachloro-p-dioxin; TSS; BOD

Sample Time - **1431**

Notes / Other Observations -

O'BRIEN & GERE ENGINEERS, INC

USACE Low Flow Ground Water Sampling Field Log

Monitoring Well - **AC-04**

Assunpink Creek Restoration
Trenton, NJ

Northing - **504503.2493** Easting - **418195.6671**
Permit Number - **E201103689**

Sampling Information

Date - **05/23/11**
OBG Personnel - **MPM / BAD**
Weather - **Cloudy/cool**

Evacuation Equipment - **2-in. dia. Grundfos submersible**
Sample Equipment - **$^1/_4$-in. dia. Teflon tubing**

Well / Ground Water Measurements

Depth to Water - **9.66** ft bTOC
Well Depth - **15.31** ft bTOC
Screen Interval - **5-15** ft bTOC

Top of Casing Elevation - **22.64** ft MSL
Water table elevation - **12.98** ft MSL
Depth to Pump Intake - **13** ft bTOC

Well Evacuation Data

Stabilization Criteria			± 3 %	± 0.1 SU	± 10mV	± 3 %	< 40 NTU	10%	< 0.3 ft	
Time	**Rate** mL/min	**Vol.** L	**temp** C	**pH** Std	**ORP** mV	**Cond** mS/cm	**turb** NTU	**DO** mg/L	**DTW** ft	**Comments**
827	-	0.0	17.06	6.38	227	1.05	750	4.20	9.76	
832	*400*	2.0	16.97	6.49	224	1.03	213	3.86	9.75	
837	*400*	4.0	16.97	6.49	220	1.03	213	3.86	9.76	
842	*400*	6.0	16.97	6.49	220	1.03	213	3.86	9.76	
847	*400*	8.0	16.89	6.39	214	1.02	8.5	3.33	9.79	
852	*400*	10.0	16.90	6.38	212	1.02	4.0	3.34	9.78	
857	*400*	12.0	16.88	6.53	202	1.02	2.4	3.37	9.81	
902	*400*	14.0	16.86	6.50	203	1.02	2.4	3.32	9.80	
907	*400*	16.0	16.87	6.47	204	1.02	2.0	3.27	9.79	
912	*400*	18.0	16.87	6.47	204	1.02	2.0	3.27	9.78	
917	*400*	20.0	16.87	6.47	204	1.02	2.0	3.27	9.78	
922	***SAMPLE***	--	16.87	6.47	203	1.02	2.0	3.26	9.76	
							DO Kit	NM	**Fe^{2+} Kit**	NM

Notes / Sample Information

Sample Name - **AC-04**

Appearance at start - **Cloudy/brown**
Appearance after purging - **Clear**

QC Sample - **MS/MSD**
Odor - **No**

DTW after purging - **9.78** ft bTOC
DTW at time of sampling - **9.76** ft bTOC

Total Volume Purged - **20** liters
Purge Rate - **400** mL/min

Analysis - TCL VOCs; TCL SVOCs; TCL Pesticides; TCL Herbicides ; TCL PCBs
TAL Metals (including Hg); Oil and Grease; 2,3,7,8 Tetrachloro-p-dioxin; TSS; BOD

Sample Time - **922**

Notes / Other Observations -

APPENDIX D

Additional Field Documentation

Location _____ Date 9/17/10

Project / Client _____

1620 SRS completes samples to coolers. Decon fluids poured into test pit area. All hands offsite End of Entry.

Location Trenton, NJ Date 4/25/11

Project / Client USACE Assunpink Soil & GW investigation

WEATHER: 75°F, overcast, humid
0800 SRS onsite for soil & GW investigation at S.P. All work will be conducted according to project specific work plan (WP), HASP & ~~FSP~~ (FSP comprised of SAP) SAP consists of FSP & QAPP. These documents were submitted to USACE on 4/22/11. Accutest onsite to deliver bottleware for samples to be collected during this mob.
0815 Cynard Lopez (CL) & Gene Blemmings (GB) of Layfech Drilling mobilized to site for drilling. Site Utilities have been marked by various utility providers. Today's scope includes advancing three soil borings near corner of Assunpink Drive intersec. w/ S. Warren Street.

SRS 4/25/11

Location _____ Date 4/23/11

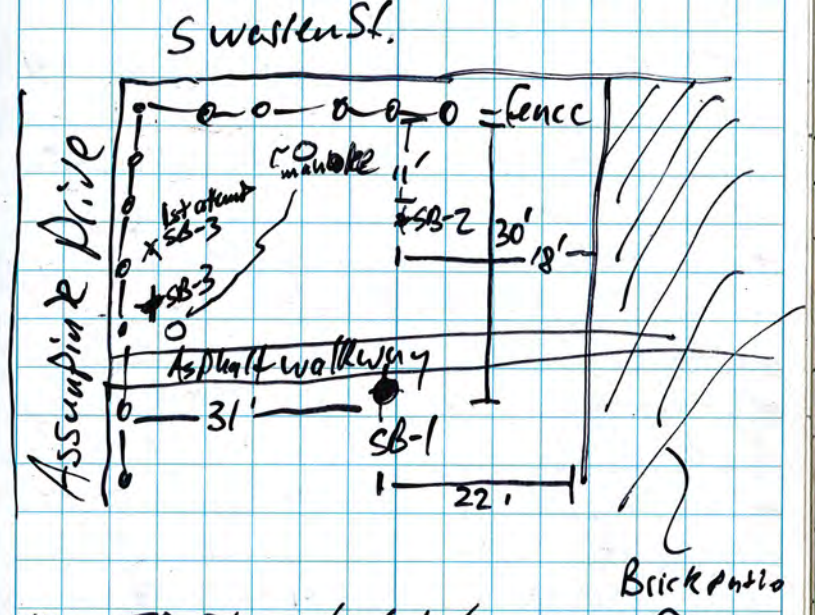
Project / Client _____

0830 Mike Mohn (MM) of USACE and MTC OEOBG onsite.
PSEG onsite @ 0815. PSEG states that all of their utilities are clear of drilling areas.
0915 SRS conducts toolbox H&S meeting. All hands sign all applicable H&S (including JSA) forms: see forms for details.
Scott Mathews of Nisen Geolin onsite, gives ok to drill at staked locations (all locations for soil borings (3) and wells (4) have been marked by USACE). SRS calibrates PID Minirae (Pine # 4563), unit calibrates & is functioning properly. See cal log for details.
0930 Soil boring locations SB-1 through SB-3 (see map on next page) will be soft dug to 4' bgs. Begin soft digging SB-1.

SRS 4/23/11

Location _____ Date 4/23/11

Project / Client _____



1000 TB-01 collected by SRS for VOC.
1100 SB-1 soft dig complete to 4' bgs. No utilities encountered. MTC offsite. OTD moves to soft dig @ ~~SB-3~~ SRS SB-2.
In addition to soil samples that will be collected for env. analysis, SRS will collect soil samples on 2ft intervals for

-SRS 4/23/11

Location _____ Date 4/25/11

Project / Client _____

future observation. These will be placed in appropriately labeled 1 pint jars. Each environ sample (exception is Trip blanks) will be collected for VOCs using 3 encores w/associated moisture sample. VOC samples will be collected from a discrete interval (i.e. @ 4'). Other env. analysis will be collected from a 0.5' interval for analysis of TCL SVOC+10, TAL metals, TCL PCBs, TCL chlor. pesticides, TCL chlorherbicides, oil & grease and EPH. Note that VOC analysis is TCL VOC+10: and will be collected in 3 encores. Analyses other than VOCs will be designated collectively as "other analyses" in this logbook (for this mob). All analytical methods are presented in the QAPP for this project. — SJS 4/25/11.

Location _____ Date 4/25/11

Project / Client _____

1215 SB-2 soft dig complete to 4' bgs. no utilities encountered. UTD moves soft dig rig to SB-3

1400 SB-3 soft dig complete to 4' bgs, no utilities encountered. SB-3 location adjusted to close to ~~E. side of~~ Asphalt walkway. Thrust block for Trigen water lines encountered in 1st attempt for SB-3 soft dig. 1500 UTD has set up decon pad area. Soft dig's oil transferred to 55-gallon steel drum, labeled as non haz mat under eval.

1530 Site/boring secured. All hands off site. End of Entry.

SJS 4/25/11

Location Trenton, NJ Date 4/26/11

Project / Client Assunpink / USACE
Soil & GW invs.

WEATHER: 85°F clear
0730 SRS & UTD (CC&GB) onsite. Prep to drill @ SB-3. Cont. split spoon samples / auger to refusal on bedrock. Equipment is already decontaminated
0830 MTC & MM onsite.
0840 SRS conducts H&S / pre work planning meeting. All hands sign appropriate forms.
0845 Begin drilling SB-3. Auger to 4' (depth of soft clay - slight sidewall collapse overnight), then begin coring cont. split spoons.
0855 SB-03 05.5-05.5 collected by SRS for VOC/moist.
0900 SB-03 05.5-06.0 collected by SRS for other analysis.
0930 SB-03 12.0-12.0 collected by SRS for VOC/moist.
0935 SB-03 11.5-12.0 collected by SRS for other analysis

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Location Date 4/26/11

Project / Client

0940 SB-03 13.0-13.0 collected by SRS for VOC/moist.
0945 SB-03 12.0-14.0 collected by SRS for other analysis.
1000 SB-03 18.0-18.0 collected by SRS for VOC/mois. DUP-01 collected from this interval for VOC/mois.
1005 SB-03 16.0-18.0 collected by SRS for other analyses. DUP-01 collected from this interval for other analysis
1030 SB-03 19.0-19.0 collected by SRS for VOC/moist.
1035 SB-03 18.0-19.3 collected by SRS for other analyses.
1045 SB-03 refusal on bedrock has been encountered @ 19.3'. Moving rig to SB-02. Will batch decon augers (UTD has additional clean augers for SB-01 & 02). Split spoons & sampling equip is being decontaminated according to the FSP.

SRS 4/26/11

Location _____ Date 4/26/11

Project / Client _____

1100 Begin drilling SB-2.
1105 SB-02.06.0-06.0 collected by SRS for VOC/moist. (note asphalt present in this sample)
1110 SB-02.04.0-06.0 collected by SRS for other analyses (note asphalt present in this sample).
1155 SB-02.13.0-13.0 Collected by SRS for VOC/mois.
1200 SB-02.12.0-14.0 Collected by SRS for other analyses.
1215 SB-02.14.0-14.0 collected by SRS for VOC/mois.
1220 SB-02.14.0-16.0 collected by SRS for other analyses.
1230 SB-02.20.0-20.0 collected by SRS for VOC/mois.
1231 SB-02.20.0-20.0 MS collected by SRS for VOC/mois.
1232 SB-02.20.0-20.0 MSD Collected by SRS for VOC/mois.
1240 SB-02.19.5-20.0 collected by SRS for other analyses.

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Location _____ Date 4/26/11

Project / Client _____

1241 SB-02.19.5-20.0 MS Collected by SRS for other analyses.
1242 SB-02.19.5-20.0 MSD Collected by SRS for other analyses.
Drillers have demobilized from SB-2. SB-2 terminated @ 20' bgs. Lithology at this depth is fill. SRS/MTC/PM discuss total depth and decide to terminate SB-2 @ this depth. UTD is decontaminating drill equipment w/ Steam cleaner. Equip. decon is being conducted over bermed decon. Pad (fluids containerized). Samples collected during this mob for "other analyses" are collected within a 6" subsurface interval except when insufficient material is present in split spoon (poor recovery). In the case of poor recovery a "longer" sample interval is selected for sampling.

SRS 4/26/11

Location

Date 4/26/11

Project / Client

1330 MM offsite (note: MTC offsite @1230). UTD initiating SB-1

1345 SB-01.05.0-05.0 collected by SRS for VOC/moist.

1350 SB-01.05.0-05.5 collected by SRS for other analyses.

1400 SB-01.12.0-12.0 collected by SRS for VOC/moist.

1405 SB-01.11.5-12.0 collected by SRS for other analyses.

1415 SB-01.14.0-14.0 collected by SRS for VOC/moist.

1420 SB-01.12.0-14.0 collected by SRS for other analyses.

1440 SB-01.14.5-14.5 collected by SRS for VOC/moist.

1445 SB-01.14.0-16.0 collected by SRS for other analyses.

1500 SB-01.19.5-19.5 collected by SRS for VOC/moist/TWE.

1505 SB-01.19.2-19.7 collected by SRS for other analysis.

SRS 4/26/11

Location

Date 4/26/11

Project / Client

1506 SB-1 terminated @ refusal on bedrock @ 19.9' bgs.

1515 FB-01 collected by SRS for other analyses and VOCs. Field/rinsate blank collected by pouring lab supplied d.I. water into decontam. S.S. sampling bowl then into the appropr. lab supplied bottles.

1550 UTD offsite. SRS paperwork.

Ammendments: 1140 SB-02 11.0-11.0 collected by SRS for VOC & moist.

1145 SB-02.11.0-11.5 collected by SRS for other analyses. End ammendment.

1620 SRS relinquishes samples to Accutest (Priority courier) courier.

1645 SRS cleaned up, offsite.

End of Entry.

4/26/11

Location Trenton, NJ Date 4/27/11

Project / Client Assunpink / USACE
Soil & GW Inves.

WEATHER: 65°F, Overcast
0700 SRS onsite, prep for today's activities.
0730 UTD (CL & GB) onsite. SRS conducts H&S meeting topic is lightning safety/stand-down. All hands sign appropriate H&S forms. Prep to drill at AC-1 cont. SS. to bedrock/refusal/20' bgs, then well install after reaming borehole to min. 8" Ø.
0800 TB-02 collected by SRS for VOC.
0815 FB-02 collected by SRS for other analyses.
0820 MMOTUSACE onsite. Begin drilling AC-1 w/ 8" Ø OD augers/these OD augers were used for SB.1 through SB.3.
0920 AC-01.08.0-08.0 collected by SRS for voc/moist.
0925 AC-01.07.5-08.0 collected by SRS for other analyses.

SRS 4/27/11

Location Date 4/27/11 SRS

Project / Client

1140 AC-01.14.0-14.0 collected by SRS for voc/moist.
1145 AC-01.14.0-14.5 collected by SRS for other analyses.
Several obstructions much are observed to be boulders have been encountered from 10.5-14' bgs. Combination of auger and 3.5" Ø air lotary used to pass obstructions. See borelog for details.
1330 AC-01.20.0-20.0 and Dup-03 collected by SRS for voc/moist (dup collected from AC-01 @ 20').
1335 AC-01.18.0-20.0 and Dup-04 collected by SRS for voc/moist (SRS) other analyses (dup collected from AC-01 18-20').
Following SS. from 14-14.5', AC-1 advanced to 18' bgs w/ air hammer & augers. Split spoon collected 18-20 through typical fill material. 14.5-18 consisted of (cont.)

SRS 4/27/11

Location _____ Date 4/27/11

Project / Client _____

1335 (cont.) concrete and boulders.
1340 MM offsite. UTD will remove 8"ØOD augers from AC-1 and will ream borehole w/ 6¼" ID augers (9.5"Ø OD), to total depth of 20'bgs in prep. for setting 4"ØPVC well.
1415 8"Ø augers removed, UTD will decon augers.
1445 Augers/equip deconned, UTD mixing grout to grout soil borings. Grout mix is mixed w/ potable H_2O and 94 lbs Portland Cement per 6 lbs Bentonite Powder, 4 bags cement and 24 lbs bentonite mixed w/potable water constitute 50 gallons of grout. This "grout mix" ratio will be used throughout this mobilization.
1520 SB-1 & 2 grouted will need to top off tomorrow & grout SB-3.
1620 SRS relinquishes samples to Accutest courier. UTD offsite @ 1530.
SRS offsite. End of Entry. [signature] 4/27/11

Location ~~Assun~~ Sus. Trenton, OT Date 4/29/11

Project / Client USACE / Assunpink Creek Soil/GW Investigation

WEATHER: 70°F, clear, warming up
0730 SRS and UTD (CL and Brad Barnes (BB)) onsite. Prep to install AC-01 well. Conversation yesterday between MM of USACE & SRS & NTC yielded the following: due to rebar bisecting AC-01 borehole @ ≈8'bgs, a 2"Ø PVC well will be installed in the AC-01 borehole, as a 4"Ø PVC well may be difficult to install/ may be affected by the rebar. OBG & USACE are "ok" with 2"Ø PVC well installation.
0800 UTD will drill out AC-01 borehole w/ 4¼" ID, 8"Ø OD augers to the total depth of the boring (20'bgs) and will install PVC well.
1045 AC-01 mon. well was been set, SRS confirmed all measurements using down hole tape during well construction. Well const. (cont.)

Location _____ Date 4/29/11

Project / Client _____

1045 (Cont.) as follows:
20-19.4' bgs = 2" ø sch40 PVC Sump
19.4-7' bgs = 2" ø sch40 PVC 10 slot screen
7' bgs - grade = 2" ø sch40 PVC riser
20-5' bgs #0 Sand
5-4.5' bgs #00 Sand.
Granular bentonite will be hydrated and added as slurry from 4.5-3' bgs. Grout mix will be emplaced from 3' bgs to near grade to allow for flushmounting of well. DTW gauged at AC-01 12.10' bgs, no product indicated by int. meter.
1220 Bentonite seal added to AC-01, grout added to AC-01 on top of bent. seal to 1' bgs to allow for flushmount install. Lock & cap placed on AC-01. SB-02 & 03 grouted to 0.25' bgs, will top off w/ soil. SB-01 grouted to 6' bgs, taking grout @ 6' bgs will top off at later date.
1300 Equipment bag/ unpacks decontaminate
SAS 4/29/11

Location _____ Date 4/29/11

Project / Client _____

1300 (cont.) set decon pad, rig moved into position over AC-03.
1315 Begin drilling AC-03. Cont. split spoon/4 1/4" I.D. augers.
1320 TB-03 collected by SAS for VOC.
1330 MM offsite. SAS only AC-03.05.5-05.5 collected by SAS for VOC/moist. Dup-05 collected at this loc/depth for VOC/mois.
1335 AC-03.05.5-06.0 collected by SAS for other analyses. Dup-06 collected at this loc./depth for other analyses.
1340 AC-03.07.5-07.5 collected by SAS for VOC/moist.
1345 AC-03.08.0-08.0 collected by SAS for other analyses.
1350 AC-03.09.0-09.0 collected by SAS for VOC/moist.
1355 AC-03.09.0-09.5 collected by SAS for other analyses. PID reads max 15 ppm from 9-9.5' bgs. Black, oily fill, petroleum odor. Sudan IV dye test neg. No product.
SAS 4/29/11

Location _____ Date 4/29/11

Project / Client _____

1440 AC-03.10.5-10.5 collected by SRS for VOC/moist.
1445 AC-03.10.0-11.0 collected by SRS for other analyses.
1450 AC-03.11.2-11.2 collected by SRS for VOC/mois
1455 AC-03.11.0-11.5 collected by SRS for other analyses. Only ≈ 10 grams soil available, likely insuffic. volume for "other analyses".
1530 FB-03 collected by SRS for VOC & other analyses. Same field/rinsate blank methods used as previously noted during this mob.
UTD offsite.
1535 SRS completing paperwork. Status report calls to MM & MTC
1645 SRS relinquishes samples to Accutest courier.
1655 SRS offsite. End of Entry.

4/28/11

Location Trenton, NJ Date 5/2/11

Project / Client Assunpink Creek/USACE Soil & GW investigation

WEATHER: 60°F, overcast
0830 SRS & UTD (CL & BB) onsite
0845 MM of USACE onsite. Safety meeting/all hands sign appropr. forms.
0900 call w/ SRS, MTC & MM to discuss AC-03 well construction. The call yields the following decision for AC-03 well construction. All 2" Ø Sch. 40 PVC.
~~10 slot screen~~ SRS 5/2/11
sump 11.5-11.2' bgs
10 slot screen 11.2-4' bgs
riser 4' bgs - ≈2' ags (for stickup well)
#0 sand 11.5-3.5' bgs
#00 sand 3.5-2.5' bgs
bent. slurry 2.5-2' bgs
grout 2' bgs - near grade (to allow for outer steel casing stickup)
1000 UTD has cleaned w/ 4 1/4" ID augers back to 11.5' bgs. Well constructed as described above. SRS gauges/confirms all measurements. — SRS 5/2/11

Location _____ Date 5/2/11

Project / Client _____

1045 Equipment decontaminated GTD will mob to AC-04. Will drive on streets and will not cross culvert, will access N. side of culvert from NE gate on Broad Street.
1055 Begin drilling AC-04, location adjusted ≈ 5' closer to culvert.
1100 TB-04 collected by SRS for VOCs.
1115 AC-04.02.5-02.5 and Dup-07 collected by SRS for VOC/moist.
1120 AC-04.02.5-03.0 collected by SRS for other analyses. Dup-05 also collected for other analyses.
1130 AC-04.06.0-06.0 collected by SRS for VOC/moist.
1135 AC-04.05.5-06.0 collected by SRS for other analyses.
1200 AC-04.09.0-09.0 collected by SRS for VOC/moist.
1205 AC-04.09.0-09.5 collected by SRS for other analyses.

SRS 5/2/11

Location _____ Date 5/2/11

Project / Client _____

1230 AC-04.12.0-12.0 collected by SRS for VOC/moist.
1231 AC-04.12.0-12.0MS collected by SRS for VOC/moist.
1232 AC-04.12.0-12.0MSD collected by SRS for VOC/moist.
1235 AC.04.12.0-12.5 collected by SRS for other analyses.
1236 AC-04.12.0-12.5MS collected by SRS for VOC/moist.
1237 AC-04.12.0-12.5 MSD collected by SRS for other analyses.
1300 AC-04 terminated @ 15.25' bgs, saprolitic schist encountered, 12-12.5' bgs weathered schist below. SRS/MM discuss lithology and terminating AC-04 @ 15.25' bgs. MM says "ok". SRS & MM discuss well construction. MM is ok with well const. as follows

SRS 5/2/11

Location _____ Date 5/2/11

Project / Client _____

1300 (cont). Boring/augers advanced (4¼" ID augers = 8.5" OD) to bottom of S.S. interval @ 15.25' bgs.
#00 sand backfill 15.25 - 14.3' bgs
All PVC is sched. 40, 2" ϕ.
Sump 14.3 - 14' bgs
10 slot screen 14 - 4' bgs
riser 4' bgs - 2' ags (for stickup)
#0 sand 14.3 - 3.5' bgs
#00 sand 3.5 - 2.5' bgs
bent. slurry 2.5 - 2' bgs
grout 2' bgs to near grade (to allow for stickup (const.) All PVC is outfitted w/ locking exp. gripper plug.
1305 MM offsite.
1400 AC-04 constructed as described above. SRS gauges/confirms depths of all well materials.
1420 UTD moves rig to decon pad, deconning all equipment.
1400 AMMENDMENT: FB-04 collected by SRS for VOC & other analyses, using method prev. described during this mob. SRS stain

Location _____ Date 5/2/11

Project / Client _____

1430 AMMENDMENT entry.
→ 1140 AC-04. 07.5 - 07.5 collected by SRS for VOC/moist.
1145 AC-04. 07.5 - 08.0 collected by SRS for other analyses.
1500 SRS relinquishes samples to Accutest courier.
1540 AC-3 & AC-4 grouted to near grade (above bent. seals). UTD also finishes grouting AC-5 & 6 SB-1. All wells are locked. All hands offsite.
End of Entry.

5/2/11

Location Trenton, NJ Date 5/3/11

Project / Client Assunpink Creek / USACE Soil & GW Inves.

WEATHER: 65°F mostly clear
0730 All hand's Const, k, Safety meeting - Sign forms.
0830 Rig in pos. over AC-02, 2' S. of USACE Stake, closest the rig can get on slope while maintaining safe work conditions.
0848 Begin drilling AC-02. TB-05 collected by SRS for VOC.
0910 AC-02. 08.0-08.0 collected by SRS for VOC/moist.
0915 AC-02. 06.0-08.0 collected by SRS for other analyses.
0930 AC-02. 08.5-08.5 collected by SRS for VOC/moist.
0935 AC-02. 08.5-09.0 collected by SRS for other analyses.
0940 AC-02. 12.0-12.0 collected by SRS for VOC/moist.
0943 AC-02. 12.0-12.5 collected by SRS for other analyses.

SRS 5/3/11

Location Date 5/3/11

Project / Client

1000 AC-02. 15.0-15.0 collected by SRS for VOC/moist.
1005 AC-02. 15.0-15.5 collected by SRS for other analyses.
1030 AC-02. 18.0-18.0 collected by SRS for VOC/moist.
1035 AC-02. 17.5-18.0 collected by SRS for other analyses.
Split spoon collected @ AC-02 to 18' bgs, augers (8.5" ØOD, 4 1/4" ØID) could not be advanced past 14' bgs, due to rig instability on slope, hard augering potentially could cause rig to shift causing a safety hazard. SRS explains this to MM of USACE Onsite @ ≈0900. MM agrees that augers will not be advanced past 14' bgs and that a well will be set to this depth.

SRS 5/3/11

Location _____ Date 5/3/11

Project / Client _____

1045 MM & SRS discuss well construction and agree to install AC-02 as follows.
#00 Sand backfill in split spoon hole from 18-14.3 bgs. All 2" Ø Sch 40 PVC.
- Sump 14.3-14' bgs
- 10 Slot Screen 14-4' bgs
- Riser 4' bgs - 2' ags (for stickup)
#0 Sand 14.3-3.5' bgs
#00 Sand 3.5-2.5' bgs
bent slurry 2.5-2' bgs
grout 2' bgs - near grade, well will be finished as stickup, PVC outfitted w/ expandable gripper plug, locked outer casing.
1100 MM OFUSTEE offsite.
1130 FB-05 collected by SRS for VOC & other analyses using field/rinsate blank methods described previously during this mob.
~~1215 AC-04 con~~ SRS 5/3/11

Location _____ Date 5/3/11

Project / Client _____

1215 AC-02 constructed as described above. SRS gauges all well materials as they are installed and confirms all depths/measurements. (CTD) is digging/preparing to pour 3'x3'x4" (thick) concrete pads around AC-01 through AC-04. AC-01 will be finished w/ flushmount manhole: AC-02 through -04 will be finished w/ locking steel stickups. SRS has calibrated the site PID each morning. Calibration info is recorded on cal logs. Unit has calibrated and functioned properly each day during this mob. Cal. will continue each day and a note will only be made in this log book if there is a problem w/ the PID unit.
1515 Concrete pad/flushmount set at AC-01.
1530 SRS relinquishes samples to Accutest courier.
1000 All hands offsite. End of Entry.
SRS 5/3/11

O'BRIEN & GERE COMPANIES

SUBJECT:	PAGE:	BY:	DATE:	JOB NUMBER:
Assunpink Creek	1	MTC	4/25/11	47289

0820 MTC onsite WX - 66° - overcast (fog).

0838 Mike Mohn (MM) onsite we discuss utility locations near 3 new borings (all 3 look ok - one is close to Trigen 24-in & water lines).

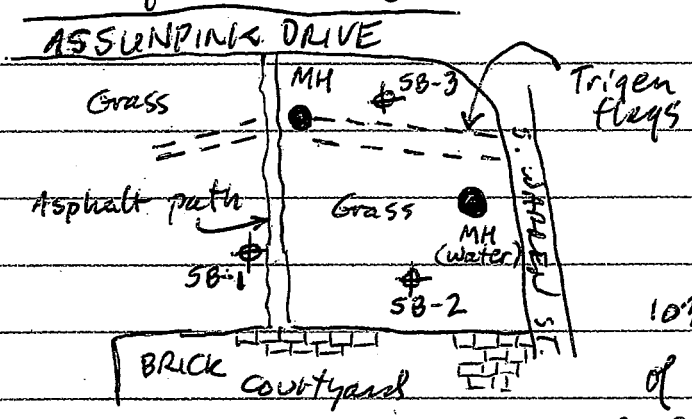
0845 UniTech brings ATV drill rig onsite. MM goes to talk w/ state office guy about parking UniTech's trailer somewhere. Conard Lopez Gene - Blemings

0905 Scott Mattews (Trigen) onsite. Reviews utilities with MM.

0910 SRS conducts tailgate H&S meeting, reviews utility issues.

0925 UTD sets up soft dig - we will do all 3 new borings in same hole. Scott Mattews offsite. No utility conflicts identified.

0930 Begin soft-dig location 1. (SB-1).



1020 Still digging SB-1. Retrieved a brick and several larger rocks plus a bunch of gravel. Difficult to get below about 4 ft.

1030 MM decides we will sample upper part of OB below 4 ft since it will be hard to get sample from sidewall of soft dig pit, we already have log of material from test pit #1 (only ~5-6 ft away) and the soft dig pit has been aerated. We agree this is ok. Also he wants to not soft dig boring AC-1 - he will move it w/in ~1-2 ft of TP #1 (so we know there are no utilities present - based on TP #1 log). We are ok with this approach. MM also notes that we gave utilities the opportunity to come onsite to mark.

1050 - move to SB #2. All agree that 4 ft is sufficient depth at SB-1.

1100 MTC offsite for OB office

O'BRIEN & GERE COMPANIES

SUBJECT: Assunpink Creek	PAGE: 1	BY: MTC	DATE: 4/26/11	JOB NUMBER: 47289

0820 MTC onsite WX - sunny 70°F SES onsite - Unitech is setting up drill rig on SB-3, which has been moved based on soft dig.

0823 Mike Mohn (MM) onsite - USACE

0835 tool box safety meeting - heat stress, drilling safety
all hands sign entry log + pre task planner for the day

0845 start drilling SB-3 4-6': 4/5/5/5 6-8': 7/6/6/4
6-inch interval yields enough soil for 3 Encore samplers + about 1/4 of a 250 ml glass jar. MM says not to worry about the 6-inch constraint (per the Tech Reqs) if we need more sample. Driller reports probable refusal at around 8 ft, likely an obstruction (not bedrock).

12-14' 1/2/1/1 * Note: MM agrees that we should do NJ CDF gw in March/July

* send some soft dig photos to MM 12-14': saturated at ~13'? some decayed schist in bottom 1-2". No odor. Log for TP-01 says we stopped at 14' due to sheen on WT (did not encounter bedrock).

16-18' 2/6/9/11 - all saprolite 18-20': refusal at ~19.5 ft.

* ask Gary about protocol if 6" interval is not enough for all sample volume

Gary says to collect a parameter group from 6" then take next 6", etc.

1030 completed boring SB-3. Moving rig to SB-2.

1050 Start drilling SB-2 4-6': fill drove a reddish-brown stone in tip

6-8': 13/8/5/9 - fill 8-10': 15/16/11/8 - 1" recovery

12-14': tip wet. 6" recov. no odor or PID lots of brick

14-16': 5/22/28/9 saturated - red-maroon sandy shale/mudstone

~~16-18': mudstone - some weathered~~

16-18': mostly slough. No sample.

18-20': 1st spoon - all slop - resampled → 18/14/15/15 fill - no impact.

MM confirms not to go deeper.

He also says they have done a parallel boring to get sample if there is impact. MM says we will not do extra boring - after discuss. w/ him.

* check for site map showing GW contours + USTs - Vebka.

Location Trenton, NJ Date 5/4/11
Project / Client Assunpink Well Install

WEATHER: Cloudy, cool, rain showers
Crew: Michael McDonald (MPM) of OSG;
Clark B of Unitech; MM of USACE
Task: Monitoring Well Development
PPE: Level "D"
0730 MPM on site
0735 Unitech Crew (2) on site, we will begin developing at AC-3
0800 begin developing AC-03
0810 well goes dry after a couple minutes of pumping, we will con't to allow recharge and pump dry.
0903 MPM on site, discuss AC-03 water has a petroleum odor and sheen. We will con't to pump and allow recharge at 10-15 min intervals
1000 MPM off site
*note: min RAE 2000 PID cal'd with 100 ppm isobutylene gas reading = 101 ppm (ok); LaMotte turbidity meter cal'd 3 pt 1, 10, 100 NTU; Horiba U-22 cal'd w/ std. cal solution
MPM 5/4/11

Location Trenton, NJ Date 5/4/11
Project / Client Assunpink Well Install

1025 rain has slowed, Uni-Tech works on sticking at AC-02
1120 Hunter Research Archeologists stop by to see Mike Mohn, MPM updates them on progress and well location - off site in around 10 min.
Uni-Tech is working on frame pad for AC-04
1200 end AC-03 well development 4hr time limit effluent going ~40 gals removed
1200 start pumping AC-04
1300 AC-03 completed by drillers
1450 con't developing AC-04 ~65 gals out tanks = 277
1600 end development at AC-04 90 gals removed tanks ~200 now 4hr max development time
1620 3 drums generated Unitech off site.
1630 gates locked MPM off site
END ENTRY

Location Trenton, NJ Date 5/5/11

Project / Client USACE - Assunpink
Soil & GW investigation

0730 SRS and MPM of OBG onsite, UTD (CL & BB) onsite. Todays activities will include advancing 2 soil borings (SB-04 & SB-05) and well devel @ AC-01 & AC-02. SB-05 located adjacent to S. Side of culvert @ midpoint between TP-07 and AC-03 (as marked in the field by MM of USACE). SB-04 is located adjacent to S. side of culvert at midpoint between AC-03 and AC-02 (as marked in the field by MM of USACE).
0745 MPM/UTD have begun development (pumping & surging) at AC-01.
0800 FB-06 collected by SRS for VOC.
0820 Begin split spoon/augering @ SB-05 (SRS & UTD).
0845 SB-05. 05.5-05.5 collected by SRS for VOC/mois.
0850 SB-05 05.0-05.5 collected by SRS for other analyses.
— SRS 5/5/11

Location Date 5/5/11

Project / Client

0900 SB-05. 08.0-08.0 and Dup-09 collected by SRS for VOC/mois.
0905 SB-05. 07.5-08.0 and Dup-10 collected by SRS for other analyses.
0915 SB-05. 09.0-09.0 collected by SRS for VOC/mois.
0920 SB-05. 08.5-09.0 collected by SRS for other analyses.
0930 SB-05. 12.5-12.5 collected by SRS for VOC/mois.
0935 SB-05. 12.5-13.0 collected by SRS for other analyses
1000 SB-05. 15.0-15.0 collected by SRS for VOC/mois.
1005 SB-05. 14.7-15.2 collected by SRS for other analyses
1015 End SB-05 boring @ 17.3' bgs refusal on weathered schist.
1045 SB-05 grouted to grade using previously described grout mix.
— SRS 5/5/11

Location _____ Date 5/5/11

Project / Client _____

1100 Rig moved to SB-04, will drill using decontaminated equipment.
1110 SB-04. 06.0-06.0 collected by SRS for VOC/moist
1115 SB-04. 05.5-06.0 collected by SRS for other analyses.
AMENDMENT as follows:
1111 SB-04. 06.0-06.0 MS collected by SRS for VOC/mois.
1112 SB-04. 06.0-06.0 MSD collected by SRS for VOC/mois. Endammend.
1125 SB-04. 07.5-07.5 collected by SRS for VOC/moist.
1130 SB-04. 07.5-08.0 collected by SRS for Other analyses.
1140 SB-04. 09.0-09.0 collected by SRS for VOC/mois
1145 SB-04. 08.5-09.0 collected by SRS for Other analyses.
1200 SB-04. 14.0-14.0 collected by SRS for VOC/mois.
1205 SB-04. 13.5-14.0 collected by SRS for other analyses.
SRS 5/5/11

Location _____ Date 5/5/11

Project / Client _____

1206 SB-04. 13.5-14.0 MS collected by SRS for other analyses
1207 SB-04. 13.5-14.0 MSD collected by SRS for other analyses.
1215 SB-04. 17.5-17.5 collected by SRS for VOC/mois
1220 SB-04. 17.3-17.8 collected by SRS for other analyses.
1230 SB-04 terminated on Mtusal (saprolitic schist) @ 18 bgs
MMOTUSACE Offsite (onsite @ 0830).
1315 SB-04 grouted to grade.
All SB locations staked/marked.
UTD has decontaminated rig/equip.
All decon fluids transferred to steel 55-gallon drums, mixed w/well devel. fluids. SRS collects FB-06 for VOC, other analyses using methods described earlier during this mob.
1400 Site cleanup, MPM developing AC-02. DRUM count totals for this mob. Liquid (Purge & decon fluids): 5. Solids (drill cuttings) 7 includes one drum w/ decon pad plastic. SRS 5/5/11

Location _____ Date 5/15/11

Project / Client _____

1430 SRS relinquishes samples to Accutest courier. All boring & well installation for this mob complete. UTD cleaning up, MPM developing AC-02. SRS relinquishes logbook to MPM.

1435 con't to develop AC-Ø2, 33 gals out, turb high. AC-Ø1 was developed for 4 hours (max) 54 gals removed

1604 complete develop AC-Ø2 51 gallons removed, ended due to time limit (see log) final effluent + cloudy, grey.

1620 Site off site

END EN TRY

MO 5/15/11

Location Trenton, NJ Date 5/9/11

Project / Client USACE: Assunpink Creek

WEATHER: Sunny, mild ~70°F

Crew: MPM of O3G, MM of USACE
Kyle Kohler of O3G (observ.)

Task: Slug Testing & Transducer Deployment

PPE: level "D"

Ø734 MPM on site for slug testing, at AC-Ø1. Will slug test all wells & deploy transducers for 3Ø days in AC-Ø2/Ø4

Ø74Ø DTW in AC-Ø1 = 12.21, MPM setting up to slug test

Ø827 Transducer is set 4" off the bottom. MPM just inserted slug and is waiting for the well to equilibrate before starting the slug out test.

Ø833 Transducer reads:
DTW = 12.214
Temp = 13.513
Pressure = 3.7616

Ø835 slug out for AC-Ø1 Test 1

Ø855 END AC-Ø1 Test 1 (2Ø min)
final readings:

Location _____ Date 5/15/11

Project / Client _____

1430 SRS relinquishes samples to Accutest courier. All boring & well installation for this mob complete. UTD cleaning up, MPM developing AC-02. SRS relinquishes logbook to MPM.

1435 con't to develop AC-Ø2, 33 gals out, turb high. AC-Ø1 was developed for 4 hours (max) 54 gals removed

1604 complete develop AC-Ø2 51 gallons removed, ended due to time limit (see log) final effluent + cloudy, grey.

1620 Ale off site

END EN TRY

NG 5/15/11

Location Trenton, NJ Date 5/9/11

Project / Client USACE: Assunpink Creek

WEATHER: Sunny, mild ~70°F

Crew: MPM of O3G, MM of USACE
Kyle Kohler of O3G (obsv.)

Task: Slug Testing & Transducer Deployment

PPE: level "D"

Ø734 MPM on site for slug testing at AC-Ø1. Will slug test all wells & deploy transducers for 30 days in AC-Ø2/Ø4

Ø740 DTW in AC-Ø1 = 12.21, MPM sets up to slug test

Ø827 Transducer is set 4" off the bottom. MPM just inserted slug and is waiting for the well to equilibrate before starting the slug out test.

Ø833 Transducer reads:
DTW = 12.214
Temp = 13.513
Pressure = 3.9610

Ø835 slug out for AC-Ø1 Test 1

Ø855 END AC-Ø1 Test 1 (20 min)
final reading:

Location Assinpink Creek Date 5/9/11
Project / Client USACE

DTW = MPM 5/9/11 12.347 ft BTOC
Temp = 13.330 °C
Press = 3.043 PSI
Sling was decorned before test (0100), also not removed completely from well during tests as to not disturb the transducer
0856 reset sling for test 02
0902 start test 2
0922 END test 2
DTW = 12.196 ft BTOC
Temp = 13.293
Press = 3.045
0924 reset sling
0933 about test 3, bad sling pull
Test 2 data looks good
0936 Start test 3
0952 Transducer Set in AC-02
DTW = 9.67 ft BTOC
0956 End Test 3
DTW = 12.095 ft BTOC
Temp = 13.348 °C
Press = 3.049 PSI
1000 at AC-02 sling in

Location Assinpink Creek Date 5/9/11
Project / Client USACE

1009 sling out begin Test 1 for AC-02
1024 end Test 1
DTW = 9.651 ft BTOC
Temp = 12.817 °C
Press = 2.706 PSI
1025 reset sling
1032 begin Test 2
1033 Kyle Kohler onsite, MPM gives H&S briefing, sign in
1047 stop Test 2
DTW = 9.662 ft BTOC
Temp = 12.844 °C
Press = 2.707 PSI
1049 reset sling for test 3
1057 Test 3 started
1100 KNK to AC-03 to Set the transducer
DTW = 10.19
1112 End Test 3
DTW = 9.657 ft BTOC
Temp = 12.784 °C
Press = 2.706 PSI
1125 sling in, wait for calibration
MPM 5/9/11

Location Trenton, NJ Date 5/9/11
Project / Client USACE: Assunpink Creek

1138 begin AC-43 Test 1
1140 MPM off site
1153 end test 1. reset sling for test 2
1200 start test 2
1241 abort test 2, bad sling pull transducer moment
1208 test 2 started
1223 stop test 2
DTW = 10.154 ft BTOC
Temp = 11.289°C
press = 1.2507 PSI
1224 reset sling
1232 start Test 3
MPM 5/9/11
1248 stop test 3
DTW = 10.141 ft BTOC
Temp = 11.237°C
Press = 1.212 psi
1255 at AC-04
DTW = 9.68 ft BTOC
1304 start test 1
1319 stop test 1
MPM 5/9/11

Location Trenton, NJ Date 5/9/11
Project / Client USACE: Assunpink Creek

DTW = 9.691
Temp = 16.210
Press = 2.937
1324 reset sling
1325 start test 2
1344 stop test 2
DTW = 9.704 ft BTOC
Temp = 16.342 °C
Press = 2.929 psi
1341 reset sling
1344 start test 3
1359 stop test 3
DTW = 9.681 ft BTOC
Temp = 16.294°C
Press = 2.929 PSI
1421 MPM has set transducers in AC-02 & 04 to record for 31 days linear at 15 mins reading DTW - transducer depth set at 3/27/11, MPM cannot change.
1441 MPM notices sine tests are running
1500 AC-04 running since 1430
AC-02 running since 1450
1520 MPM offsite END ENTRY

Location Trenton, NJ Date 5/16/11

Project / Client USACE

WEATHER: overcast, mild - showers
Crew: MPM of OBG
Task: Data Download - Long Term Monitoring
PPE: Level "D"
1140 MPM on site to download data from transducers in AC-02 & AC-04
1230 Both tests running as scheduled data has been downloaded & saved Tests will con't
1240 MPM checks Assunpink Creek conditions, flow is elevated, weep holes are just about covered, heavy rains in this area over the past 2 days.
1250 MPM locks gate and is off site

ENTRY

5/16/11

Location Trenton, NJ Date 5/23/11

Project / Client USACE: Assunpink Creek GW Sampling

WEATHER: Cloudy, cool - showers (BAO)
Crew: MPM of OBG; Brett Dillingham of OBG OBS; MM of USACE; Vargo Associates Surveyors (2)
PPE: Level "D"
Task: GW/SW Sampling Event
0715 MPM on site
0720 BAO on site - H&S / Pre-Work plans
0737 BAO cal's mini RAE PID, Horiba U-52 (2) & Lutron Turb meter
MPM begins WL

WellID	DTW	PID / Comment
AC-01	12.34	0.0 / none
AC-02	9.77	0.0 / none
AC-03	10.22	97.8 / odor
AC-04	9.66	0.0 / none
Upstream	10.74	- / new center
Downstream	19.30	- / new center

0844 KMK of OBG on site
0800 at AC-04 - the gate down the AC-04 was open lock & chain on ground
0809 begin AC-04 at 400 ml/min

Location Trenton, NJ Date 5/16/11

Project / Client USACE

WEATHER: overcast, mild - showers
Crew: MPM of OBS
Task: Data Download - Long Term Monitoring
PPE: Level "D"
1140 MPM on site to download data from transducers in AC-02 & AC-04
1230 Both tests running as scheduled data has been downloaded + saved Tests will con't
1240 MPM checks Assunpink Creek conditions, flow is elevated, weep holes are just about covered, heavy rains in this area over the past 2 days.
1250 MPM locks gate and is off site

END ENTRY

5/16/11

Location Trenton, NJ Date 5/23/11

Project / Client USACE: Assunpink Creek GW Sampling

WEATHER: Cloudy, cool - showers (BAO)
Crew: MPM of OBS; Brett Dilling of OBS OPS; MM of USACE; Vargo Associates Surveyors (2)
PPE: Level "D"
Task: GW/SW Sampling Event
0715 MPM on site
0730 BAO on site - H&S / Pre Work plans
0737 BAO cal's mini RAE PID, Horiba U-52 (2) & Lockwood Tech's meter
MPM begins WL

wellID	DTW	PID / Comment
AC-01	12.34	0.0 / none
AC-02	9.77	0.0 / none
AC-03	10.22	97.8 / odor
AC-04	9.66	0.0 / none
Upstream	14.74	- / new center
Downstream	19.34	- / new center

0844 KMK of OBS on site
0800 at AC-04 - the gate down to AC-04 were open lock & chain on ground
0807 begin AC-04 at 400 ml/min

Location Trenton, NJ Date 5/23/11
Project / Client USACE: Assunpink Creek

0845 Vargo onsite Lori Lavergne + Col Constantine, MPM gives H&S briefing
0905 TB052311 collected by MPM for TCL VOCs + 14
0922 AC-04 collected by MPM for all parameters (MS) (MSD)
0939 first walk through w/ Vargo shown soil borings, wells, pt rail locations + weepholes. Weepholes will not be sampled. Downstream only weepholes outside culvert on W edge will be surveyed. One extra weephole where the roof collapsed will be added if Vargo can access
1042 first filling bottles at AC-04
1107 begin AC-01 at 400 ml/min
1110 Kennedy SW Sampler decomm'd
1125 UPSTREAM SW collected by MPM for All parameters (SW-1)
1157 AC-01 collected by MPM for all parameters (DUP)
1200 FB052311SW collected by MPM for all parameters

Location Trenton, NJ Date 5/23/11
Project / Client USACE: Assunpink Creek

1240 DOWNSTREAM SW sample collected by MPM for All SW parameters
1313 MM off site. Downstream weephole location are ± 0.2 ft according to Vargo. BAD decomm'd
1322 begin AC-02 at 400 ml/min
1331 begin AC-03 at 344 ml/min
1413 AC-02 collected by MPM for all GW parameters
1431 AC-03 collected by MPM for all GW parameters
1540 prep to collect IDW sample for SO + GW composite from all drums
1515 IDW052311 collected by MPM for SO + AQ TCLP FULL RCRA CLAS
1545 FB052311 collected by MPM for all GW parameters (prep)
1620 organize bottles for P/U tomorrow at the office
1700 all off site, see next page for list of analytes for GW + SW samples

MM

Location Trenton, NJ Date 6/8/11

Project / Client USACE: Assunpink Creek

GW Samples Analyzed for:

V8260TCL10+
AB8270TCL11+
MTAL NJ
XPPTCL11
OG1664
SB1613 TCDD
H8151 STD
BOD
TSS

SW Samples Analyzed for:

V8260TCL10+
AB8270TCL11+
MTAL NJ
XPPTCL11
OG1664
H8151 STD

Location Trenton, NJ Date 6/8/11

Project / Client USACE: Assunpink Creek

WEATHER: Sunny, hot 80° → 99°F
Crew: MPM of OBG; MM of USACE
Task: Transducer Retrieval / water levels
PPE: Level "D"
0810 MPM on site, will download transducer data and gauge all wells on site, SW-1/2 + meet w/ Kleinfelder to gauge wells on Veolia property (MW-2/5)
0820 cal mini RAE PID w/ 100 ppm isobutylene
0827 reads 102 ppm ok
0838 PID malfunction - temp error + high humidity
0840 MPM opens all on site wells
0845 MPM talks to Kleinfelder crew, they will meet us when MM is on site
0859 MM on site
0944 END AC-02 Test final reading: 10.108 manual: 10.12
0912 END AC-04 Test final reading: 9.704 manual: 9.74

6/8/11

Location Trenton, NJ Date 6/8/11

Project / Client USACE: Assunpink Creek

GW Samples Analyzed for:

V8260TCL10+
AB8270TCL11+
MTAL NJ
XPBTCL11
OG1664
SB1613 TCDD
H8151 STD
BOD
TSS

SW Samples Analyzed for:

V8260TCL10+
AB8270TCL11+
MTAL NJ
XPBTCL11
OG1664
H8151STD

Location Trenton, NJ Date 6/8/11

Project / Client USACE: Assunpink Creek

WEATHER: Sunny, hot 80° → 99°F
Crew: MPM of OBG; MM of USACE
Task: Transducer Retrieval / Water Levels
PPE: Level "D"
0810 MPM on site, will download transducer data and gauge all wells on site, SW-1/2 + meet w/ Kleinfelder to gauge wells on Veolia property (MW-2/5)
0820 cal mini RAE PID w/ 100 ppm isobutylene
0827 reads 102 ppm ok
0838 PID malfunction - Comp Error + high humidity
0840 MPM opens all on site wells
0845 MPM talks to Kleinfelder crew, they will meet us when MM is on site
0859 MM on site
0944 END AC-02 Test final reading: 10.108 round: 10.12
0912 END AC-04 Test final reading: 9.704 round: 9.74

6/8/11

Location Trenton, NJ Date 6/8/11

Project / Client USACE: Assunpink Creek

Well ID	DTW / DTP ('bloc)	Comment / PID
AC-01	12.70	No odor / Nd
AC-02	10.18	No odor / Nd
AC-03	10.32	No odor / Nd
AC-04	9.70	No odor / Nd
SW-01	11.01	–
SW-02	20.12	–
MW-2	12.78/12.83	
MW-8		

MM decided to photo copy notes from Kleinfelder, MPM will save in file, Kleinfelder will provide OBA with well elevations 1109 all wells 8" casing, MPM holds gate and is off site

EMPTY

6/8/11

Location Date

Project / Client

CONTENTS

PAGE	REFERENCE	DATE

Location Trenton, NJ Date 9/16/10

Project / Client Assunpink Test Pits.

WEATHER: 80°F clear
0730 OBG (DB, SC, DW, SRS) onsite for geotech/Env. investigation via test pit digging. Utilities marked by NJ one call & private utility marker. SRS calibrates Minirae 2000 PID unit calibrates & is functioning properly.
0815 VSACE Onsite: Earl, Corey and Mike Mohn. Trackhoe delivered to site this morning. Accutest labs drops off Coolerware. SRS will screen excavated material w/ PID. Excavated material will be classified using Unified Soil classification system. Geotech samples will be collected at approx 2ft intervals and env. samples (at least one per test pit) will be collected.
1050 TP-07 refusal, on bedrock @ 3.5 bgs (see log for details).
1100 TP07091610013.5 collected by SRS for VOCs (3 encores), TCLP VOCs/moisture.
- SRS 9/16/10

Location _____ Date 9/16/10

Project / Client _____

1115 TP07091620100013.5 collected by SRS for additional parameters (will be defined in later entry). This is a composite sample collected from test pit material 0-13.5' bgs. VOC samples (ie. collected at 1100) will be discrete grab intervals (in the case of the 1100 sample, from 13.5' bgs.
1130 Begin TP-6
1150 TP06 09162010 07 collected by SRS for VOC, TCLP VOC, mois & addit. params. This is a grab sample collected from 7' bgs.
1245 TP06 terminated @ 17': sidewall continuous cave-in.
1345 Begin TP-05.
1355 TP05 091620100 08, MS, MSD collected by SRS for VOC, TCLP VOC & mois.
1445 TP05 091620100014 MS, MSD collected by SRS for addit. params. End TP-05 on refusal/bedrock @ 14' bgs.
1545 TP04 091620101 3 collected by SRS for VOC, TCLP VOC, moisture and addit. params. ~ SRS 9/16/10

Location _____ Date 9/16/10

Project / Client _____

1600 TP-04 terminated/refusal on bedrock @ 15' bgs. Samples relinquished to Accutest Laboratories. Note Additional params are: SVOC, TAL metals, PCB, Pest., Herb. DRO, GRO, TCLP (metals, SVOC, Pest, Herb, VOC) Ignitability, corrosivity, reactivity (cyanide & sulfide). Only 4 samples & MS/MSD will be analyzed for TCLP, Ignit., corros & reactivity. The rest will be placed on ADCD. All sampling work, decon, H&S, is being conducted in accordance with the FSP, QAPP, HASP & WP.
1630 Begin TP-3
1700 TP03 09162010 08 collected by SRS for VOC, TCLP VOC, mois and addit. params. Fuel/oil odor & sheen on groundwater from 8-12' bgs. PID 1.0 PPM. Body terminated @ 12' bgs due to lightning storm
1745 All hands offsite. USACE offsite @ 1200. End of Entry

9/16/10

Location Trenton, NJ Date 09/17/10
Project / Client Assunpink Test Pits

WEATHER: 75°F, Clear
0700 SRS/MH onsite: prep for Sampling
0730 Drew Baldwin (DES) onsite. SRS calls M. Mann/USACE w/ status report of yesterday's activity
0835 Begin TP-02 @ 0830
Note: TP020917201 0 RB collected by SRS/MH for VOC, SVOC, TAL metals, Pesticides PCB, DRO & GRO. This is a field insate blank sample collected by pouring lab supplied DI water over decontaminated stainless steel sampling spoon into the approp. lab supplied containers.
0915 TP020917201007 collected by SRS for VOC, TCLP VOC & moisture
092 TP020917201002 10.5 collected by SRS for addit. params. This is a composite from 2-10.5' @ TP-02. 0-2' is aggregate used for driveway and is not included in sample. - SRS 9/17/10

Location Date 9/17/10
Project / Client

0930 Groundwater in TP-02 @ 11' soil is leading 20.6 ppm w/PID, fuel oil odor free product (blade) floating on GW, thickness is less than 0.01'.
0935 TP020917201011 collected by SRS for VOC, TCLP VOC, moist. & addit. params. Discussion w/ NTC & MM/USACE. Test pit will be terminated @ 11.5' bgs due to fuel oil/ floating product impact.
0940 End TP-02, all material replaced in Test Pit, impacted material was kept in excavator bucket, & replaced.
1030 Prep to mob to TP-1 No visual/odor indications of fuel oil on excavator bucket. SRS scans w/PID: 0.0 ppm.
1045 Begin TP-1
1125 TP010917201012 collected by SRS for VOC, TCLP VOC & moisture.
SRS 9/17/10

Location _____ Date 9/17/10

Project / Client _____

1130 TP0109172010 0013.5 collected by SRS for addit. Params.
1140 TP0109172010 14 collected by SRS for VOC, TCLP VOC, MOIS and addit. Params. Ground water entering TP-01 at 14' bgs fuel oil odor, sheen on groundwater soil PID at 14' is 26.9 ppm. Test pit terminated at 14' due to impact (based on field observations).
1145 Test pit complete will backfill, then monitor excavator bucket w/PID as per TP-02. If bucket is not impacted (per field observations) will mobilize to TP-08 or TP-09
1320 Begin TP-09
Note: 1305 TP0109172010RB collected by SRS/MH for same Params and using same methodology as 0830 9/17/10 rinsate blank
1345 TP0909172010 07 collected by SRS for VOC, TCLP VOC & mois.
SRS.

Location _____ Date 9/17/10

Project / Client _____

1345 (cont.) this also collected ~~VOCs~~ for SVOC, PCB, Pest/Herb, TAL metals, DRO & GRO.
1355 End TP-09 @ 9' due to constant sidewall collapse.
1415 Begin TP-08
1430 TP0809172010 04 collected by SRS for VOC, TCLP VOC, mois, SVOC, PCB, Pest/Herb, TAL metals, DRO & GRO.
1500 End TP-08, Refusal on bedrock @ 11'. Attempted to dig through bedrock from 1440-1500, could not penetrate.
Note 1445 TP08-0909172010 collected by SRS for TCLP metals, TCLP SVOC, TCLP Pest/Herb, Ignitibility, Corrosivity & Reactivity (sulfide & CN). This is a sample collected (as per USACE direction) of the TP-09 (0-9') & TP-08 (0-11') material. All sch. activities complete.
SRS 9/17/10

Location _____ Date 9/17/10

Project / Client _____

1620 SRS collects samples to cools. Decon fluids poured into test pit area. All hands offsite End of Entry.

Location Trenton, NJ Date 4/25/11

Project / Client USACE Assunpink Soil & GW investigation

WEATHER: 75°F, overcast, humid
0800 SRS onsite for soil & GW investigation at site. All work will be conducted according to the project specific work plan (WP), HASP & ~~FSP~~ SAP (~~FSP~~ Com SAP) 4/25/11. SAP consists of FSP & QAPP. Those documents were submitted to USACE on 4/22/11. Architest onsite to deliver bottleware for samples to be collected during this mob.
0815 Cynard Lopez (CL) & Gene Blemmings (GB) of Unitech Drilling onsite for drilling. Site utilities have been marked by various utility providers. Today's scope includes advancing three soil borings near corner of Assunpink Drive intersec. w/ S. Warren Street.

SRS 4/25/11

Samp[illegible]king Form
USACE - [illegible] Jersey CDFs
Monitor Well Installation and Groundwater Sampling

Collected By	Sample ID	QA/QC (Y/N)	Type of QA/QC	Sample Matrix	Sample Date	Sample Time	Composite (Y/N)	Sample Method	Sample Depth	Units	Date Sent to Lab	TAT	Anaylses
SRS	TB-01	Y	TB	WW	4/25/11	1000	N	QC	—	—	4/26/11	Std	VOC
SRS	SB-03.05.5-05.5	N	—	SO	4/26/11	0855	N	Splitspoon(SS)	5.5	ft bgs	4/26/11	Std	VOC, moisture
SRS	SB-03.05.5-06.0	N	—	SO	4/26/11	0900	Y	SS	5.5-6.0	"	4/26/11	"	SVOC, metals, mercury, PCB, Pest. Herb, oil & grease, EPH (II)
SRS	SB-03.12.0-12.0	N	—	SO	"	0930	N	SS	12.0	"	"	"	VOC, mois.
SRS	SB-03.11.5-12.0	N	—	SO	"	0935	Y	SS	11.5-12.0	"	"	"	II
SRS	SB-03.13.0-13.0	N	—	SO	"	0940	N	SS	13.0	"	"	"	VOC, mois.
SRS	SB-03.12.0-14.0	N	—	SO	"	0945	Y	SS	12.0-14.0	"	"	"	II
SRS	SB-03.18.0-18.0	N	—	SO	"	1000	N	SS	18.0	"	"	"	VOC, mois.
SRS	SB-03.16.0-18.0	N	—	SO	"	1005	Y	SS	16.0-18.0	"	"	"	II
SRS	DUP-01	Y	Dup	SO	"	1000	N	SS	18.0	"	"	"	VOC, mois.
SRS	DUP-02	Y	Dup	SO	"	1005	Y	SS	16.0-18.0	"	"	"	II
SRS	SB-03.19.0-19.0	N	—	SO	"	1030	N	SS	19.0	"	"	"	VOC, mois.
SRS	SB-03.18.0-19.3	N	—	SO	"	1035	Y	SS	18.0-19.3	"	"	"	II
SRS	SB-02.06.0-06.0	N	—	SO	"	1105	N	SS	6.0	"	"	"	VOC, mois
SRS	SB-02.04.0-06.0	N	—	SO	"	1110	Y	SS	4.0-6.0	"	"	"	II
SRS	SB-02.11.0-11.0	N	—	SO	"	1140	N	SS	11.0	"	"	"	VOC, mois
SRS	SB-02.11.0-11.5	N	—	SO	"	1145	Y	SS	11.0-11.5	"	"	"	II
SRS	SB-02.13.0-13.0	N	—	SO	"	1155	N	SS	13.0	"	"	"	VOC, mois
SRS	SB-02.12.0-14.0	N	—	SO	"	1200	Y	SS	12.0-14.0	"	"	"	II
SRS	SB-02.14.0-14.0	N	—	SO	"	1215	N	SS	14.0	"	"	"	VOC, mois
SRS	SB-02.14.0-16.0	N	—	SO	"	1220	Y	SS	14.0-160	"	"	"	II
SRS	SB-02.20.0-20.0	N	—	SO	"	1230	N	SS	20.0	"	"	"	VOC, mois
SRS	SB-02.20.0-20.0 MS	Y	MS	SO	"	1231	N	SS	20.0	"	"	"	"
SRS	SB-02.20.0-20.0MSD	Y	MSD	SO	"	1232	N	SS	20.0	"	"	"	"
SRS	SB-02.19.5-20.0	N	—	SO	"	1240	Y	SS	19.5-20.0	"	"	"	II
SRS	SB-02.19.5-20.0 MS	Y	MS	SO	"	1241	Y	SS	19.5-20.0	"	"	"	"
SRS	SB-02.19.5-20.0 MSD	Y	MSD	SO	"	1242	Y	SS	19.5-20.0	"	"	"	"
SRS	SB-01.05.0-05.0	N	—	SO	"	1345	N	SS	5.0	"	"	"	VOC, mois.
SRS	SB-01.05.0-05.5	N	—	SO	"	1350	Y	SS	5.0-5.5	"	"	"	II
SRS	SB-01.12.0-12.0	N	—	SO	"	1400	N	SS	12.0	"	"	"	VOC, mois

Samp[illegible]cking Form
USACE - [illegible]w Jersey CDFs
Monitor Well Installation and Groundwater Sampling

Collected By	Sample ID	QA/QC (Y/N)	Type of QA/QC	Sample Matrix	Sample Date	Sample Time	Composite (Y/N)	Sample Method	Sample Depth	Units	Date Sent to Lab	TAT	Anaylses
SRS	SB-01.11.5-12.0	N	—	SO	4/26/11	1405	Y	Spit spoon (SS)	11.5-12.0	ft bgs	4/26/11	Std	II
SRS	SB-01.14.0-14.0	N	—	SO	"	1415	N	SS	14.0	"	"	"	VOC, moisture
SRS	SB-01.12.0-14.0	N	—	SO	"	1420	Y	SS	12.0-14.0	"	"	"	II
SRS	SB-01.14.5-14.5	N	—	SO	"	1440	N	SS	14.5	"	"	"	VOC, mois.
SRS	SB-01.14.0-16.0	N	—	SO	"	1445	Y	SS	14.0-16.0	"	"	"	II
SRS	SB-01.19.5-19.5	N	—	SO	"	1500	N	SS	19.5	"	"	"	VOC, mois
SRS	SB-01.19.2-19.7	N	—	SO	"	1505	Y	SS	19.2-19.7	"	"	"	II
SRS	FB-01	Y	FB	WW	"	1515	N	Rinsate Blank	—	—	"	"	II & VOC
SRS	TB-02	Y	TB	WW	4/27/11	0800	N	Trip Blank	—	—	4/27/11	"	VOC
SRS	FB-02	Y	FB	WW	"	0815	N	Rinsate Blank	—	—	"	"	II & VOC
SRS	AC-01.08.0-08.0	N	—	SO	"	0920	N	SS	8.0	ft bgs	"	"	VOC, mois.
SRS	AC-01.07.5-08.0	N	—	SO	"	0925	Y	SS	7.5-8.0	"	"	"	II
SRS	AC-01.14.0-14.0	N	—	SO	"	1140	N	SS	14.0	"	"	"	VOC, mois.
SRS	AC-01.14.0-14.5	N	—	SO	"	1145	Y	SS	14.0-14.5	"	"	"	II
SRS	AC-01.20.0-20.0	N	—	SO	"	1330	N	SS	20.0	"	"	"	VOC, moisd
SRS	AC-01.18.0-20.0	N	—	SO	"	1335	Y	SS	18.0-20.0	"	"	"	II
SRS	Dup-03	Y	Dup	SO	"	1330	N	SS	20.0	"	"	"	VOC, mois.
SRS	Dup-04	Y	Dup	SO	"	1335	Y	SS	18.0-20.0	"	"	"	II
SRS	TB-03	Y	TB	WW	4/29/11	1320	N	Trip Blank	—	—	4/29/11	Std	VOC
	AC-03.05.5-05.5	N	—	SO		1330	N	SS	5.5	ft bgs			VOC, mois.
	AC-03.05.5-06.0	N	—			1335	Y	SS	5.5-6.0	"			II
	Dup-03					1330	N		5.5				VOC, mois
	Dup-04					1335	Y		5.5-6.0				II
	AC-03.07.5-07.5					1340	N		7.5				VOC, mois
	AC-03.06.0-08.0					1345	Y		6.0-8.0				II
	AC-03.09.0-09.0					1350	N		9.0				VOC, mois
	AC-03.09.0-09.5					1355	Y		9.0-9.5				II
	AC-03.10.5-10.5					1440	N		10.5				VOC, mois
	AC-03.10.0-11.0					1445	Y		10.0-11.0				II
	AC-03.11.2-11.2					1450	N		11.2				VOC, mois

Samp[illegible]king Form
USACE - New Jersey CDFs
Monitor Well Installation and Groundwater Sampling

Collected By	Sample ID	QA/QC (Y/N)	Type of QA/QC	Sample Matrix	Sample Date	Sample Time	Composite (Y/N)	Sample Method	Sample Depth	Units	Date Sent to Lab	TAT	Anaylses
SRS	AC-03.11.0-11.5	N	—	SO	4/29/11	1455	Y	Splitspoon/SS	11.0-11.5	ft bgs	4/29/11	Std	II
	FB-03	Y	FB	WW	" "	1530	N	Field Rins. Blank	—	—	4/29/11	Std	VOC, II
	TB-04	Y	TB	WW	5/2/11	1100	N	Trip blank	—	—	5/2/11	Std	VOC
	AC-04.02.5-02.5	N	—	SO		1115	N	SS	2.5	ft bgs			VOC, mois
	AC-04.02.5-03.0					1120	Y		2.5-3.0				II
	Dup-07					1115	N		2.5				VOC, mois
	Dup-08					1120	Y		2.5-3.0				II
	AC-04.06.0-06.0					1130	N		6.0				VOC, mois
	AC-04.05.5-06.0					1135	Y		5.5-6.0				II
	AC-04.09.0-09.0					1200	N		9.0				VOC, mois
	AC-04.09.0-09.5					1205	Y		9.0-9.5				II
	AC-04.07.5-07.5					1140	N		7.5				VOC, mois
	AC-04.07.5-08.0					1145	Y		7.5-8.0				II
	AC-04.12.0-12.0					1230	N		12.0				VOC, mois
	AC-04.12.0-12.0 MS	Y	MS	SO		1231	N		12.0	ft bgs			VOC, mois
	" " MSD	Y	MSD	SO		1232	N		12.0				VOC, mois
	AC-04.12.0-12.5	N	—	SO		1235	Y		12.0-12.5				II
	" " MS	Y	MS	SO		1236	Y						II
	" " MSD	Y	MSD	SO		1237	Y						II
	FB-04	Y	FB	WW		1400	N	Field Rins. Blank	—	—			VOC, II
	TB-05	Y	TB	WW	5/3/11	0843	N	Trip blank	—	—	5/3/11		VOC
	AC-02.08.0-08.0	N	—	SO		0910	N	SS	8.0	ft bgs			VOC, mois
	AC-02.06.0-08.0					0915	Y		6.0-8.0				II
	AC-02.08.5-08.5					0930	N		8.5				VOC, mois
	AC-02.08.5-09.0					0935	Y		8.5-9.0				II
	AC-02.12.0-12.0					0940	N		12.0				VOC, mois
	AC-02.12.0-12.5					0945	Y		12.0-12.5				II
	AC-02.15.0-15.0					1000	N		15.0				VOC, mois
	AC-02.15.0-15.5					1005	Y		15.0-15.5				II
	AC-02.18.0-18.0					1030	N		18.0				VOC, mois

Samp[illegible]king Form
USACE [illegible]w Jersey CDFs
Monitor Well Installation and Groundwater Sampling

Collected By	Sample ID	QA/QC (Y/N)	Type of QA/QC	Sample Matrix	Sample Date	Sample Time	Composite (Y/N)	Sample Method	Sample Depth	Units	Date Sent to Lab	TAT	Anaylses
SRS	AC-02.17.5-18.0	N	—	SO	5/3/11	1035	Y	Spl, ts/ooms	17.5-18.0	ftbgs	5/3/11	Std	II
SRS	FB-05	Y	FB	WW	5/3/11	1130	N	Field Ins. blank	—	—	5/3/11	Std	VOC, II
	TB-06	Y	TB	WW	5/5/11	0800	N	Trip blank	—	—	5/5/11		VOC
	SB-05.05.5-05.5	N	—	SO		0845	N	SS	5.5	ftbgs			VOC, mois
	SB-05.05.0-05.5		—			0850	Y		5.0-5.5				II
	SB-05.08.0-08.0		—			0900	N		8.0				VOC, mois
	SB-05.07.5-08.0		—			0905	Y		7.5-8.0				II
	Dup-09	Y	Dup			0900	N		8.0				VOC, mois
	Dup-10	Y	Dup			0905	Y		7.5-8.0				II
	SB-05.09.0-09.0	N	—			0915	N		9.0				VOC, mois
	SB-05.08.5-09.0		—			0920	Y		8.5-9.0				II
	SB-05.12.5-12.5		—			0930	N		12.5				VOC, mois
	SB-05.12.5-13.0		—			0935	Y		12.5-13.0				II
	SB-05.15.0-15.0		—			1000	N		15.0				VOC, mois
	SB-05.14.7-15.2	N	—			1005	Y		14.7-15.2				II
	SB-04.06.0-06.0	N	—			1110	N		6.0				VOC, mois
	SB-04-06.0-06.0MS	Y	MS			1111	N		6.0				" "
	" "MSD	Y	MSD			1112	N		6.0				" "
	SB-04.05.5-06.0	N	—			1115	Y		5.5-6.0				II
	SB-04.07.5-07.5		—			1125	N		7.5				VOC, mois
	SB-04.07.5-08.0		—			1130	Y		7.5-8.0				II
	SB-04.09.0-09.0		—			1140	N		9.0				VOC, mois
	SB-04.08.5-09.0		—			1145	Y		8.5-9.0				II
	SB-04.14.0-14.0		—			1200	N		14.0				VOC, mois
	SB-04.13.5-14.0		—			1205	Y		13.5-14.0				II
	" "MS	Y	MS			1206	Y		13.5-14.0				II
	" "MSD	Y	MSD			1207	Y		13.5-14.0				II
	SB-04.17.5-17.5	N	—			1215	N		17.5				VOC, mois
	SB-04.17.3-17.8	N	—			1220	Y		17.3-17.8				II
	FB-06	Y	FB	WW		1315	—	Field Ins. Blank	—	—			VOC, II

Samp ..king Form
USACE - ...w Jersey CDFs
Monitor Well Installation and Groundwater Sampling

Collected By	Sample ID	QA/QC (Y/N)	Type of QA/QC	Sample Matrix	Sample Date	Sample Time	Composite (Y/N)	Sample Method	Sample Depth	Units	Date Sent to Lab	TAT	Anaylses
MPM	TB052311	Y	TB	W	5/23/11	1045	N	—	—	-	5/24/11	2wks	TCL VOCs
MPM	AC-04	N	—	GW	5/23/11	0922	N	LOW FLOW	13	ft	5/24/11	2wks	ALL GW
MPM	AC-04_MS	Y	MS	GW	"	0922	N	LOW FLOW	13	ft	5/24/11	2wks	ALL GW
MPM	AC-04_MSD	Y	MSD	GW	"	0922	N	LOW FLOW	13	ft	5/24/11	2wks	ALL GW
MPM	SW-1	N	—	SW	5/23/11	1125	N	KEMMERER	SW	-	5/24/11	2wks	ALL SW
MPM	AC-01	N	-	GW	5/23/11	1157	N	LOW FLOW	16	ft	5/24/11	2wks	ALL GW
MPM	RB052311SW	Y	RB	WW	5/23/11	1200	N	RINSATE	-	-	5/24/11	2wks	ALL SW
MPM	DUP052311	Y	DUP	GW	5/23/11	-	N	LOW FLOW	16	ft	5/24/11	2wks	ALL GW
MPM	SW-2	N	-	SW	5/23/11	1240	N	KEMMERER	SW	-	5/24/11	2wks	ALL SW
MPM	AC-02	N	-	GW	5/23/11	1413	N	LOW FLOW	13	ft	5/24/11	2wks	ALL GW
MPM	AC-03	N	-	GW	5/23/11	1431	N	LOW FLOW	12	ft	5/24/11	2wks	ALL GW
MPM	IDW052311	N	-	GW	5/23/11	1515	Y	IDW	-	-	5/24/11	2wks	TCLP FULL RCRA CLAS
MPM	RB052311	Y	RB	WW	5/23/11	1545	N	RINSATE	-	-	5/24/11	2wks	ALL GW
MPM	IDW052011	N	-	SO	5/23/11	1515	Y	IDW	-	-	5/24/11	2wks	TCLP FULL RCRA CLAS

Daily Status Report

Field Person Providing Report	Stephen Scott
Person Receiving Report	PM M. Christopher RI/FTL
Date and time	Date 4/25/11 Time 1500
Boring Nos completed during the day	Soft dig 0-4' bgs @ SB-1, -2, -3
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	SB-3 location adjusted due to waterline concrete thrust block (encountered @ 1.5' bgs). SB-3 adjusted ≈4 East.
Deviations from planned sampling program. Note deviations in: Depth Analyses	Ø
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	Ø
Problems / Issues encountered	Ø
Assistance needed	Ø
Subcontractor performance / issues	Ex. perf. 2 man crew
Any impacts on schedule / budget	Ø
Site visitors and any requests made	M. Mohn/USACE
Miscellaneous	Drilling Billables - soft dig 3 holes 0-4' - mob - decon pad

Daily Status Report	
Field Person Providing Report	SR Scott
Person Receiving Report	PM M. Christopher RI/FTL
Date and time	Date 9/26/11 Time 1645
Boring Nos completed during the day	SB-01, 02, 03 ≅ 20' bgs each
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	Ø
Deviations from planned sampling program. Note deviations in: Depth Analyses	Ø
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	Ø
Problems / Issues encountered	Ø
Assistance needed	Ø
Subcontractor performance / issues	Ex. perf. 2 man crew
Any impacts on schedule / budget	Ø
Site visitors and any requests made	M. Mohn / USACE
Miscellaneous	Drilling Billables - split spoon @ 60' - drums @ 1

Daily Status Report	
Field Person Providing Report	SR Sott
Person Receiving Report	PM M. Christopher RI/FTL
Date and time	Date 4/27/11 Time 1600
Boring Nos completed during the day	~~SB-15~~ AC-01 0-20' bgs
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	Ø
Deviations from planned sampling program. Note deviations in: Depth Analyses	Ø
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	Ø
Problems / Issues encountered	Ø
Assistance needed	Ø
Subcontractor performance / issues	Ex. perf. 2 man crew
Any impacts on schedule / budget	Ø
Site visitors and any requests made	M. Mohn / USACE
Miscellaneous	Drilling Bilgbles

- 20' split spoons @ AC-01
- used 4 1/4" ID augers & air rotary @ AC-01
- grout 40' @ SB-1 & 2

Daily Status Report	
Field Person Providing Report	Stephen Scott
Person Receiving Report	PM M. Christopher RI/FTL
Date and time	Date 4/29/11 Time 1700
Boring Nos completed during the day	AC-01 well install to 20', AC-03 borehole to 11.5'
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	Installed AC-01 as 2"ϕ PVC well ~~instead~~ instead of 4"ϕ PVC well as prescribed in the SOW. 2"ϕ PVC well was selected based on discussion/agreement w/ USACE. Metal obstruction in AC-01 borehole was anticipated to cause difficulty in 4"ϕ PVC well install.
Deviations from planned sampling program. Note deviations in: Depth Analyses	ϕ
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	ϕ
Problems / Issues encountered	ϕ
Assistance needed	ϕ
Subcontractor performance / issues	Ex. Perf. 2 man crew
Any impacts on schedule / budget	ϕ
Site visitors and any requests made	M. Mohn / USACE
Miscellaneous	Drilling Billables - 20' PVC & well materials @ AC-01 - 20' grout SB-3 - 11.5' S.S. & augering at AC-03

Daily Status Report	
Field Person Providing Report	SR Scott
Person Receiving Report	PM M. Christopher RI/FTL
Date and time	Date 5/2/11 Time 1530
Boring Nos completed during the day	Install AC-03 (0-11.5' bgs) Drill/install AC-04 installed to 14.3' bgs
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	2" ϕ PVC used for well install as approved by USACE
Deviations from planned sampling program. Note deviations in: Depth Analyses	ϕ
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	ϕ
Problems / Issues encountered	ϕ
Assistance needed	ϕ
Subcontractor performance / issues	Ex. Perf. 7 man Crew
Any impacts on schedule / budget	ϕ
Site visitors and any requests made	M. Mohn / USACE
Miscellaneous	Drilling Billables

- 11.5' PVC well installed at AC-03
- auger / S.S. @ AC-04 to 15.25' bgs
- 14.3' PVC well installed at AC-04
- Drum Count this mob 7 drums

Daily Status Report

Field Person Providing Report	SR Scott
Person Receiving Report	PM M. Christopher RI/FTL
Date and time	Date 5/3/11 Time 1600
Boring Nos completed during the day	AC-~~04~~ 02 (SB), sampled to 18' bgs, well installed to 14.3' bgs
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	As discussed / approved by USACE in the field: - terminated SS @ AC-~~04~~ 02 (SB) at 18' bgs and augering @ 14.3' bgs - due to rig instability on slope - safety hazard if drilling cont. deeper - installed 2" ϕ PVC well
Deviations from planned sampling program. Note deviations in: Depth Analyses	ϕ
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	ϕ
Problems / Issues encountered	ϕ
Assistance needed	ϕ
Subcontractor performance / issues	Ex. Perf. 2 man crew
Any impacts on schedule / budget	ϕ
Site visitors and any requests made	M. Mohn / USACE
Miscellaneous	Drilling Billables

- S.S. to 18' bgs @ AC-~~04~~ 02 (SB)
- auger to 14.3' bgs @ AC-~~04~~ 02
- 14.3' 2" ϕ PVC well installed @ AC-~~04~~ 02 SB (SB)
- ~~concrete pad & stickups @ AC-02, 03 & 04~~
- concrete pad & flushmount @ - AC-01

Daily Status Report	
Field Person Providing Report	SR Scott for MPM
Person Receiving Report	PM M. Christopher RI/FTL
Date and time	Date 5/4/11 Time 1600
Boring Nos completed during the day	well devel @ AC-03 & AC-04, well finishing
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	Ø
Deviations from planned sampling program. Note deviations in: Depth Analyses	Ø
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	Ø
Problems / Issues encountered	Could not reach devel. Criteria of 40 NTU after 4 hours of well devel @ AC-03 and at AC-04. USACE was notified.
Assistance needed	Ø
Subcontractor performance / issues	Ex. Perf. 2 man crew
Any impacts on schedule / budget	Ø
Site visitors and any requests made	M. Mohn USACE
Miscellaneous	Drilling Billables - Develop AC-03 & AC-04 four hours each - Stickups/Pads @ AC-02, 03, 04

Daily Status Report

Field Person Providing Report	SR Scott
Person Receiving Report	PM M. Christopher RP/FTL
Date and time	Date 5/5/11 Time 1600
Boring Nos completed during the day	SB-04 (0-18') SB-05 (0-18') well devel @ AC-01 & -02
Deviations from planned boring / well installation program. Note deviations in: Location Depth Well construction	Ø
Deviations from planned sampling program. Note deviations in: Depth Analyses	Ø
Exceedances of HASP action levels. Note: Activity when it occurred Location where it occurred Worker zone Site perimeter Corrective actions if any	Ø
Problems / Issues encountered	could not reach well devel. criteria of 40NTU after 4 hours of well devel @ AC-01 & AC-02. USACE was notified
Assistance needed	Ø
Subcontractor performance / issues	Ex. Perf. Zman Crew
Any impacts on schedule / budget	Ø
Site visitors and any requests made	M. Mohn USACE & "Green TV Crew" (scheduled)
Miscellaneous	Drilling Billables

- SB-04 & -05 S.S. auger @ each to 18' bgs (17.3' bgs @ SB-05)
- grout SB-04 & 05
- develop AC-02 & -01 4 hours each
- demob

CALIBRATION DATA SHEET

Equipment Name	Mini Rae PID 2000		
Model Number	2000		
Serial Number	Pine# 4563		
☐ New	Serviced	☐ As Found ☐ As Left	☑ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 4/25/11

Standards Used: 100 ppm isobutylene

☑ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 75°F

ATMOSPHERIC PRESSURE = NA

Comments: 4/25/11 unit reads 101.2 ppm during cal. : "OK"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: [signature]

Date: 4/25/11

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CALIBRATION DATA SHEET

Equipment Name	Minirae PID		
Model Number	2000		
Serial Number	Pine # 4563		
☐ New	Serviced	☐ As Found ☐ As Left	☒ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 4/26/11

Standards Used: 100ppm isobutylene

☒ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 85°F

ATMOSPHERIC PRESSURE = NA

Comments: 4/26/11 Unit reads 100.7ppm during cal: "OK"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: [signature]

Date: 4/26/11

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CALIBRATION DATA SHEET

Equipment Name	Mini Rae PID		
Model Number	2000		
Serial Number	Pine #4563		
☐ New	Serviced	☐ As Found ☐ As Left	☒ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 4/27/11

Standards Used: 100ppm ; isobutylene

☒ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 65°F

ATMOSPHERIC PRESSURE =

Comments: 4/27/11 unit reads 100.8 ppm during cal. : "ok"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: [signature]

Date: 4/27/11

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O'BRIEN & GERE ENGINEERS, INC.

CALIBRATION DATA SHEET

Equipment Name	Minirae PID		
Model Number	2000		
Serial Number	Pine #4563		
☐ New	Serviced	☐ As Found ☐ As Left	☑ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 4/29/11

Standards Used: 100ppm isobutylene

☑ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 70°F

ATMOSPHERIC PRESSURE = NA

Comments: 4/29/11 unit reads 100.6 ppm during cal. : "ok"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: [signature]

Date: 4/29/11

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CALIBRATION DATA SHEET

Equipment Name	MiniRae PID		
Model Number	2000		
Serial Number	Pine # 4563		
☐ New	Serviced	☐ As Found ☐ As Left	☒ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 5/2/11

Standards Used: 100 ppm isobutylene

☒ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 60°F

ATMOSPHERIC PRESSURE = NM

Comments: 5/2/11 unit reads 100.8 ppm during cal: "ok"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: [signature]

Date: 5/2/11

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CALIBRATION DATA SHEET

Equipment Name	MiniRae PID		
Model Number	2000		
Serial Number	Pine# 4563		
☐ New	Serviced	☐ As Found ☐ As Left	☒ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 5/3/11

Standards Used: 100ppm isobutylene

☒ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 65°F

ATMOSPHERIC PRESSURE = NR

Comments: 5/3/11 unit leads 100.1 ppm during Cal. "OK"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: [signature]

Date: 5/3/11

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O'BRIEN & GERE ENGINEERS, INC.

CALIBRATION DATA SHEET

Equipment Name	MiniRae PTD		
Model Number	2000		
Serial Number	Pine #4563		
☐ New	Serviced	☐ As Found ☐ As Left	☒ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 5/4/11

Standards Used: 100ppm isobutylene

☒ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 55°F

ATMOSPHERIC PRESSURE = NR

Comments: 5/4/11 unit reads 101 ppm during cal. : "ok"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: MPM as recorded in logbook

Date: 5/4/11

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O'BRIEN & GERE ENGINEERS, INC.

CALIBRATION DATA SHEET

Equipment Name	Mini Rae PID		
Model Number	~~Pine #4563~~ 2000		
Serial Number	Pine #4563		
☐ New	Serviced	☐ As Found ☐ As Left	☒ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 5/5/11

Standards Used: 100ppm isobutylene

☒ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 65°F

ATMOSPHERIC PRESSURE =

Comments: 5/5/11 unit reads 99.7ppm during Cal: "ok"

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: [signature]

Date: 5/5/11

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O'BRIEN & GERE ENGINEERS, INC.

CALIBRATION DATA SHEET

Equipment Name	Mini RAE PID		
Model Number	2000		
Serial Number			
☐ New	Serviced	☒ As Found ☐ As Left	☒ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: 5/23/11

Standards Used: 100 ppm isobutylene

☒ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE = 61°F

ATMOSPHERIC PRESSURE = 1

Comments: cal'd reading = 101 ppm

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: Mi

Date: 5/23/11

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O'BRIEN & GERE ENGINEERS, INC.
CALIBRATION DATA SHEET

Equipment Name	Horiba		
Model Number	U-52		
Serial Number	UD5V97GF		
☐ New	Serviced	☐ As Found ☐ As Left	☐ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: _____

Standards Used: Standard antical solution

pH: 4.00 Temp: 16.70°c

ORP: 272

Cond: 4.50

NTU: 0.0

D.O: 10.87

☐ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE =
ATMOSPHERIC PRESSURE =

Comments: _____

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: _____

Date: _____

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O'BRIEN & GERE ENGINEERS, INC.
CALIBRATION DATA SHEET

Equipment Name	Horiba U-52		
Model Number	~~[illegible]~~ U-52		
Serial Number	~~S1K38HR8~~ PBT5MHR9		
☐ New	Serviced	☐ As Found ☐ As Left	☐ In Tolerance ☐ Out of Tolerance

Routine Calibration Due Date: _____

Standards Used: Standard autocal Solution

pH: 3.99 Temp: 16.64 °c

ORP: 3.08

Cond: 4.48

NTU: 0.0

D.O: 10.94

☐ **Environmental Conditions are Suitable for Calibration**

TEMPERATURE =
ATMOSPHERIC PRESSURE =

Comments: _____

This equipment has been calibrated using standards whose accuracies are traceable to the National Institute of Standards & Technology (NIST) within the limits of the Institute's calibration service.

Calibration Performed By: _____

Date: _____

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INSTRUMENT CALIBRATION REPORT

Pine Environmental Services, Inc.
92 North Main St, Building 20
Windsor, NJ 08561
Toll-free: (800) 301-9663

Pine Environmental Services, Inc.

Instrument ID 3349
Description LaMotte 2020
Calibrated 5/3/2011

Manufacturer LaMotte
Model Number 2020
Serial Number/ Lot Number 3313-2202
Location New Jersey
Department

State Certified
Status Pass
Temp °C 25.4
Humidity % 46

Calibration Specifications

Group # 1
Group Name Turbidity
Stated Accy Pct of Reading

Range Acc % 0.0000
Reading Acc % 3.0000
Plus/Minus 0.00

Nom In Val / In Val	In Type	Out Val	Out Type	Fnd As	Lft As	Dev%	Pass/Fail
1.00 / 1.00	NTU	1.00	NTU	0.98	1.00	0.00%	Pass
10.00 / 10.00	NTU	10.00	NTU	9.96	10.00	0.00%	Pass

Test Instruments Used During the Calibration

(As Of Cal Entry Date)

Test Standard ID	Description	Manufacturer	Model Number	Serial Number / Lot Number	Last Cal Date/ Opened Date	Next Cal Date / Expiration Date
NJ 1 NTU	Turbidity Standard 1 NTU	Ricca	1 NTU	1102591	3/15/2011	2/29/2012
NJ 10 NTU STANDARD	TURBIDITY STANDARD 10 NTU	Ricca	10 NTU	1012020	3/15/2011	11/30/2011

Notes about this calibration

Calibration Result Calibration Successful
Who Calibrated William Bass

All instruments are calibrated by Pine Environmental Services, Inc. according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

Notify Pine Environmental Services, Inc. of any defect within 24 hours of receipt of equipment
Please call 866-960-7463 for Technical Assistance

Project Name	Assunpink Creek	**Date**	4/25/11 & 4/26/11 & 4/27 & 29/11
Project Location	Trenton, NJ	**Job & Phase #**	47284

		Name	Company	Time In	Time Out	Reason
	1	Stephen Scott	OBG	0800	1530	Drilling
	2	Eugene M. Blemings	UTD	0800	↓	Drilling
	3	CUNARD LOPEZ	UTD	0800	↓	DRILLING
	4	Michael Christopher	OBG	0800	1130	"
	5	MIKE MOHN	USACE	0830	1330	"
4/25/11	6	Scott Matthews	Veolia	0900	0930	Utilities
	7	S. Scott	OBG	0730	1645	Drilling
	8	Eugene Blemings	UTD	0730	1550	↓
	9	CUNARD LOPEZ	UTD	0730	1550	↓
	10	Mike Christopher	OBG	0815	1230	"
4/26/11	11	MIKE MOHN	USACE	0830	1330	"
4/27/11	12	Stephen Scott	OBG	0700	1620	"
	13	Eugene Blemings	UTD	0730	1530	"
	14	CUNARD LOPEZ	UTD	0730	1530	"
	15	MIKE MOHN	USACE	0830	1330	"
4/29/11	16	S. Scott	OBG	0730	1530	"
	17	C. LOPEZ	UTD	0730	1530	"
	18	BRAD BARNES	UTD	0730	1655	"
	19					
	20					

Project Name	Assunpink Creek	**Date**	5/2/11, 5/3/11, 5/4/11, 5/5/11
Project Location	Trenton, NJ	**Job & Phase #**	47289

		Name	Company	Time In	Time Out	Reason
5/2/11	1	SR Scott	OBG	0830	1530	Drilling
	2	C. LOPEZ	UTD			
	3	BRAD BARNES	UTD			
5/3/11	4	SR Scott	OBG	0730	1600	
	5	C LOPEZ	UTD			
	6	BRAD BARNES	UTD			
5/4/11	7	M. McDonald	OBG	0730	1630	Develop
	8	C. LOPEZ	UTD			
	9	BRAD BARNES	UTD			
5/5/11	10	SR Scott	OBG	07030	1620	Develop wells / Soil Boring
	11	M. McDonald	OBG			
	12	C LOPEZ	UTD			
	13	BRAD BARNES	UTD			
5/23/11	14	MM McDonald	OBG	0715	1745	GW/SW Sampling
	15	B. DiFelice	OBG	0720	1745	"
	16	MMohn	USACE	0830	1200	"
	17	Kyle Kolb	OBG	0800	1745	"
	18	Lou Langer	Vanjo	0845	1100	Survey
	19	Ed Constantine	Vanjo	0845	1100	"
7/5/11	20	Brian DiFelice	OBG	0900	1115	Drum Pickup

Project Name	Assunpink Creek	**Date**	7/5/11
Project Location	Trenton, NJ	**Job & Phase #**	47289

	Name	Company	Time In	Time Out	Reason
1	Michael Carroll	OBG	0900	11:15	Drum pick up.
2	Lee McIlvaine	OBG	0900	11:15	Drum Pick up
3	M. Mol	USACE	0900	11:30	"
4	Nino Ranjo	USACE	0900	11:30	"
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Rental Equipment Tracking Log
USACE - New Jersey CDFs
Monitor Well Installation and Groundwater Sampling

Equipment Type	Owner	I.D. #	Replaces Unit #	Date Received	Date Returned	Reason Returned
MiniRae PID	Pine Env.	Pine # 4563	Ø	4/22/11		
Solinist interface	Pine Env	Pine # 11465	Ø	4/22/11		

Revision No:1
Date:February 2003

APPENDIX E

Veolia Boring Logs (MW-2 and MW-5)

AECOM	Client: Trigen	**BORING ID: MW-2**
	Project Number: 60141301-0002	
	Site Location: 302 S. Warren St., Trenton, NJ	
	Coordinates: 74° 45' 54.3" N, 40° 13' 01.8" W — Elevation: 29.89 NAVD 1988	Sheet: 1 of 1
	Drilling Method: Geoprobe	Monitoring Well Installed: Yes
	Sample Type(s): 5' Acetate Sleeves — Boring Diameter: 3"	Screened Interval: 8'-18'

Weather: Sunnyy ~30 degrees	Logged By: J. Gowan	Date/Time Started: 1/6/2010	Depth of Boring: 19'
Drilling Contractor: EPI	Ground Elevation: --	Date/Time Finished: 1/6/2010	Water Level: ~11'

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (feet)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft.)
							0.0-0.5 - Asphalt		
1							0.5-2.0 - SAND, Some Gravel, yellowish brown (10YR5/4), dry, no odors		
					0.0				
2									
		0-5		3.0	0.0		2.0-2.5 - GRAVEL, trace sand, dry, no odors		
3							2.5-3.0 - SAND, Some Gravel and Brick, dry, no odors		
4									
5									
							5.0-7.7 - SAND, brown (10YR5/3), moist, loose, no odors		
6									
					0.0				
7									
		5-10		2.7	0.0				
8									
9									
10									
							10.0-10.7 - SAA		
11					28.7		10.7-11.4 - SAND and GRAVEL, dark yellowish brown (10YR4/4), moist, petroleum odor		
12					104		11.4-12.5 - SAA, strong petroleum odor		
		10-15		3.0				MW-2	(12.0-12.5)
13							12.5-13.0 - SAND and GRAVEL, yellowish brown (10YR5/6), wet, no odors		
14									
15									
							15.0-18.0 - SAA		
16									
17									
		15-20		3.0					
18									
19									
20							End of boring @ 19', refusal.		

NOTES:

Date	Time	Depth to groundwater while drilling
		~11'

AECOM	Client: Trigen	**BORING ID: MW-5**
	Project Number: 60141301-0002	
	Site Location: 302 S. Warren St., Trenton, NJ	
	Coordinates: 74° 45' 55.0" N, 40° 13' 01.5" W — Elevation: 27.68 NAVD 1988	Sheet: 1 of 1
	Drilling Method: Geoprobe	Monitoring Well Installed: Yes
	Sample Type(s): 5' Acetate Sleeves — Boring Diameter: 3"	Screened Interval: 8'-18'

Weather: Sunny ~30 degrees	Logged By: J. Gowan	Date/Time Started: 1/5/2010	Depth of Boring: 20'
Drilling Contractor: EPI	Ground Elevation: --	Date/Time Finished: 1/6/2010	Water Level: ~12'

Depth (ft)	Geologic sample ID	Sample Depth (ft)	Blows per 6"	Recovery (feet)	Headspace (ppm)	U.S.C.S	MATERIALS: Color, size, range, MAIN COMPONENT, minor component(s), moisture content, structure, angularity, maximum grain size, odor, and Geologic Unit (If Known)	Lab Sample ID	Lab Sample Depth (Ft.)
							0.0-0.5 - Asphalt		
1					0.3		0.5-1.5 - SAND and GRAVEL fill, yellowish brown (10YR5/4), dry, no odors		
2							1.5-2.5 - GRAVEL, Some Sand, brown (10YR4/3), moist, no odors		
		0-5		3.0					
3					0.0		2.5-3.0 - Brick fragments		
4									
5									
					0.0		5.0-6.1 - GRAVEL, Some Sand, yellowish brown (10YR5/4), moist, no odors		
6									
							6.1-7.0 - Medium SAND, yellowish brown (10YR5/4), moist, no odors		
7					0.1				
		5-10		2.0					
8									
9									
10									
					2.1		10.0-10.5 - GRAVEL, Some Sand and Silt, brown (10YR4/3), moist, no odors		
11					40.1		10.5-10.8 - SAA, very dark gray (10YR3/1), moist, petroleum odor	MW-5	(10.5-11.0)
							10.8-12.0 - GRAVEL, Some Silt, trace sand, yellowish brown (10YR5/8), moist,		
12					1.8		very slight petroleum odor		
		10-15		2.0					
13									
14									
15									
					0.4		15.0-16.0 - SAND, yellow (2.5Y8/6), tight, wet, no odors		
16									
					0.3		16.0-17.0 - GRAVEL and SAND, yellowish brown (10YR5/4), wet, no odors		
17									
		15-20		3.0	0.4		17.0-18.0 - Weathered SCHIST, tight, no odors		
18									
19									
20							End of Boring @ 20'		

NOTES:

Date	Time	Depth to groundwater while drilling
		~12'

APPENDIX F

Lab Data Packages (on CD)

APPENDIX G

NJDEP Groundwater Contour Map Reporting Form

CONTOUR MAP REPORTING FORM
ASSUNPINK CREEK RESTORATION PROJECT
FOR JUNE, 8 2011
US Army Corp of Engineers - Philadelphia

This reporting form shall accompany each ground water elevation contour map submittal. Use additional sheets as necessary.

1. Did any surveyed well casing elevations change from the previous sampling event?
Yes ___No__X__. If yes, attach new "Well Certification Form B" and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes ___ No __X__. If yes, identify these wells*.

3. Are there any monitor wells present at the site but omitted from the contour map?
Yes ___ No __X__. Unless omission of the well(s) has been previously approved by the department, justify the omissions.

4. Are there any monitor wells containing separate phase product during this measuring event? Yes __X__ No . Were any of the monitor wells with separate phase product included in the ground water contour map? Yes __X__ No__. If yes, show the formula used to correct the water table elevation.

$$GW_{Corr.} = (0.87 \times Thickness) + GW_{meas.}$$

The corrected GW depth is equal to the measured ground water depth plus the measured product thickness multiplied by the specific gravity of the free product (0.87).

5. Has the ground water flow direction changed more than 45 degrees from the previous ground water contour map? ___ No __X__. If yes, discuss the reasons for the change.

6. Has ground water mounding and/or depressions been identified in the ground water contour map? Yes ___ No __X__. Unless the ground water mounds and/or depressions are caused by the ground water remediation system, discuss the reasons for this occurrence.

7. Are all the wells used in the contour map screened in the same water-bearing zone?
Yes _X_ No ___. If no, justify inclusion of those wells.

8. Were the ground water contours computer generated __, computer aided ___, or hand-drawn __X___? If computer aided or generated, identify the interpolation method(s) used.

APPENDIX H

City of Trenton Wastewater Permitting Requirements

Permit Procedure for the Acceptance of Remediated Groundwater to the Trenton Sewer Utility Sanitary Collection System

The Trenton Sewer Utility accepts remediated groundwater on a case by case basis. Any groundwater that approaches hazardous pollutant levels is not acceptable. Any groundwater having in excess of 200 mg/L of $B.O.D._5$ or Total Suspended Solids would be subject to surcharges and may not be acceptable. Any groundwater that would violate the City Sewer User Ordinance or appropriate N.J.D.E.P. categorical standards is not acceptable. Any groundwater that causes upsets, interferences, and/or pass-throughs at the Sewage Treatment Plant is also unacceptable.

PROCEDURE

The remediated groundwater generator must provide the following information:

1. Location and brief history of the site where the groundwater will be generated.
2. How the groundwater will be generated (i.e. excavation of contaminated soil)
3. If the groundwater will be pre-treated, describe the pre-treatment.
4. Volume of proposed discharge.
5. Duration and type (batch, continuous, etc.) of discharge.
6. Any Laboratory Analysis to date. (additional analysis may be required)
7. A listing of any specific contaminant/contaminants of concern which are applicable to this discharge
8. Any Local Environmental agency or N.J.D.E.P. activity involving the remediation process.

All information should be sent to Mr. Peter Lupinacci, Environmental Programs Administrator, The Trenton Sewer Utility, 1502 Lamberton Road, Trenton, NJ 08611.

If the groundwater is found acceptable, a Discharge Permit will be issued. The Discharge permit details all conditions and requirements the groundwater must meet prior to, and in order to continue, discharging into the Collection System. These conditions would be relative to quality of groundwater, volume, and frequency of sampling and analysis requirements.

DISCHARGE LOCATION

Once the determination is made regarding the issuance of a Discharge Permit, a discharge location must be ascertained (i.e. interior plumbing, sanitary manhole, etc.) The location must discharge into a sewer which has the capacity required to handle the respective volume of flow. The Sewer Utility will assist the generator in determining an appropriate discharge location. Once the location is established, the generator must provide an acceptable metering device (flow meter) to monitor daily and total flow.

SEWER FEE

Currently, the Sewer Utility charges .01 (1 cent) per gallon of discharge. The generator may be billed monthly or quarterly per the Sewer Utility and City Accounts and Control Division.

Failure to meet any permit condition and or payment of Sewer User Fee's will result in immediate termination of the generator's discharge permit.

If any further information is needed, the generator may call Mr. Peter Lupinacci directly at (609) 989-3097.

Upset. An exceptional incident in which there is unintentional and temporary noncompliance with an effluent limitation because of factors beyond the reasonable control of the industrial user. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

User. Any person who contributes, causes, or permits the contribution of wastewater into the sewer works, including those person(s) who distribute drinking water in the City's service area.

Watercourse. A channel in which a flow of water occurs, either continuously or intermittently.

15-11 DISCHARGE OF WATERS AND WASTES INTO PUBLIC SEWER SYSTEM

15-11.1 General Sewer Use Requirements.

a. General Prohibitions: A sewer user may not introduce into the collection system any waters or wastes containing objectionable or toxic substances in sufficient quantity, either singly or by interaction with other pollutants, to result in pass through, to cause interference with the sewage treatment plant, to constitute a hazard to humans or animals, to create a toxic effect in the receiving waters of the sewage treatment plant or to exceed the limitations set forth by EPA pursuant to Section 307 of the Act, or the NJDEP pursuant to Section 4 of the State Act, or as set forth in Section 15-11.1d, or wastes exerting an excessive chlorine requirement, to the degree that any such material received in the composite sewage at the sewage treatment plant exceeds the limits established by the General Superintendent for such materials.

b. Affirmative Defense: A user shall have an affirmative defense to an enforcement action brought against it for noncompliance with the general prohibitions in Section 15-11.1a of this ordinance or the specific prohibitions in Sections 15-11.1c3 through 15-11.1c15 of this ordinance if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause pass through or interference and that either:

A local limit exists for each pollutant discharged and the user was in compliance with each limit directly prior to, and during, the pass through or interference: or

2 No local limit exists, but the discharge did not change substantially in nature or constituents from the user's prior discharge when the City was regularly in compliance with its NJPDES permit, and in the case of interference, was in compliance with applicable sludge use or disposal requirements.

c. Specific Prohibitions: No person shall discharge or cause to be discharged any of the following described substances, materials, waters or wastes to any public sewers.

1 Any liquids, solids, or gases which by reason of their nature or quantity are, or may be sufficient either alone or by interaction with other substances to cause fire or explosion, or be injurious in any other way to the wastewater collection and treatment system or to the operation of the wastewater collection and treatment system. Prohibited materials include, but are not limited to, gasoline, benzene, naphtha, fuel oil, and any other substance which presents a fire hazard or other hazard to the sewer system, including any material or wastestream exhibiting a closed cup flashpoint of less than 140 degrees Fahrenheit (60 degrees Centigrade) using the test methods specified in 40 CFR 261.21;

2. Any waters or wastes having a pH less than 5.5, or greater than 9.5, or other corrosive property capable of causing damage or hazard to structures, equipment, and/or personnel of the sewage works.

3 Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in a sewer or other interference with the proper operation of the sewage works, such as, but not limited to ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, garbage, whole-blood, paunch manure, hair and fleshings, entrails, paper dishes, cups, milk containers and other like materials, either whole or ground by garbage grinders.

4 Pollutants, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference with the sewage treatment plant;

5. Any liquid or vapor having a temperature higher than 150 degrees Fahrenheit (65 degrees Centigrade) or having heat in an amount which will inhibit biological activity in the sewage treatment plant or cause the temperature of the sewage treatment plant influent sewage to exceed 104 degrees Fahrenheit (40 degrees Centigrade);

6. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin, in amounts that will cause interference or pass through;

7. Pollutants which result in the presence of toxic gases, vapors, or fumes within the sewage treatment plant in a quantity that may cause acute worker health and safety problems;

8. Trucked or hauled pollutants, except at discharge points designated by the General Superintendent.

9. Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the General Superintendent in compliance with applicable state or federal regulations.

10. No person shall discharge or cause to be discharged any storm water, surface water, ground water, roof runoff, subsurface drainage, uncontaminated cooling water or unpolluted industrial process waters into any sanitary sewer.

1 Materials which exert or cause

(a) Unusual concentration of inert suspended solids such as but not limited to fuller's earth, lime slurries and lime residues, or of dissolved solids such as, but not limited to sodium chloride and sodium sulfate.

(b) Excessive discoloration such as but not limited to dye wastes and vegetable tanning solutions.

(c) Unusual volume of flow and or concentration of wastes constituting sludge, as defined within.

12. Any water or waste containing fats, wax, grease or oils, whether emulsified or not, in excess of 100 milligrams per liter or containing substances which may solidify or become viscous at temperatures between 32 and 150 degrees Fahrenheit (zero and 65 degrees Centigrade).

13. Any waters or wastes containing strong acid iron pickling wastes or concentrated plating solutions, whether neutralized or not.

14. Any waters or wastes containing phenol or other taste or odor producing substances in concentrations exceeding limits which may be established by the General Superintendent as necessary after treatment of the composite sewage to meet the requirements of the state, federal or other public agencies of jurisdiction for such discharge to the receiving waters.

15. Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed or which are amenable to treatment only to the degree that the sewage treatment plant effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving waters.

d. Local Limits development

The following pollutant limits are established to protect against pass through and interference. No user shall discharge wastewater containing in excess of the following:

Pollutant	Local Limits (mg/l)
Arsenic	0.1
Barium	2.0
Cadmium	0.02
Chromium (total)	1.2
Copper	0.20
Lead	0.25
Mercury	0.01
Nickel	0.40
Phenol	2.0
Selenium	0.02
Silver	2.2
Zinc	0.80
Total Toxic Organics (TTO)	2.13*
BTEX (benzene, toluene, ethylbenzene and xylene)	0.5**

*Total Toxic Organics is defined as the sum of all quantifiable amounts of organic compounds which are listed in pretreatment standards in the Code of Federal Regulations 40 CFR Part 433, and the concentration of which equals or exceeds 10 micrograms per liter. The 2.13 mg/L limit is used as best available technology requirements for leachate and groundwater decontamination discharges.
**maximum for any of the four parameters making up this group.

Total Toxic Organics

1. Acenapthene	9. Hexachlorobenzene	17. Bis(2-chloroethyl)ethyl) ether
2. Acrolein	10. 1,2-Dichloroethane	18. 2-Chloroethyl vinyl ether
3. Acrylonitrile	11. 1,1,1-Trichloroethane	19. 2-Chloronapthalene
4. Benzene	12. Hexachloroethane	20. 2,4,6-Trichlorophenol
5. Benzidine	13. 1,1-Dichloroethane	21. Parachlorometa cresol
6. CarbonTetrachloride (tetrachloromethane)	14. 1,1,2-Trichloroethane	22.Chloroform(trichloromethane)
7. Chlorobenzene	15. 1,1,2,2-Tetrachloroethane	23. 2-Chlorophenol
8. 1,2,4-Trichlorobenze	16. Chloroethane	24. 1,2-Dichlorobenzene
25. 1,3-Dichlorobenzene	55. 4-Nitrophenol	85. Vinyl chloride (chloroethylene)
26. 1,4-Dichlorobenzene	**56. 2,4-Dinitrophenol**	**86. Aldrin**
27. 3,3-Dichlorobenzidene	**57. 4,6-Dinitro-o-cresol**	
28. 1,1-Dichloroethylene	58. N-nitrosodimethylamine	88. Chlordane(Technical Mixture & Metabolites)
29. 1,2-Trans-dichloroethylene	**59. N-nitrosodiphenylamine**	**89. 4,4-DDT**
30. 2,4-Dichlorophenol	**60. N-nitrosodi-n-propylamine**	**90. 4,4-DDE (p,p-DDX)**
31. 1,2-Dichloropropane	**61. Pentachlorophenol**	**91. 4,4-DDD (p,p-TDE)**
32. 1,3-Dichloropropylene(1,3-Dichloropropene)	62. Phenol	**92. Alpha-endosulfan**
33. 2,4-Dimethylphenol	**63. Bis (2-ethylhexyl) pthalate**	**93. Beta-endosulfan**
34. 2,4-Dinitrotoluene	**64. Butyl benzyl pthalate**	**94. Endosulfan sulfate**
35. 2,6-Dinitrotoluene	**65. Di-n-butyl pthalate**	**95. Endrin**
36. 1,2-Diphenylhydrazine	**66. Di-n-octyl pthalate**	**96. Endrin Aldehyde**
37. Ethylbenzene	**67. Diethyl pthalate**	**97. Heptachlor**
38. Fluoranthene	**68. Dimethyl pthalate**	98. Heptachlor epoxide (BHC-hexachloro-cyclohexane)
39. 4-Chlorophenyl Phenyl Ether	69. 1,2-Benzanthracene (benzo(a)anthracene	99. Alpha-BHC
40. 4-Bromophenyl Phenyl Ether	70. Benzo(a)pyrene(3,4-Benzopyrene	100. Beta-BHC
41. Bis (2-chloroisopropyl) ether	71. 3,4-Benzoflouranthene (benzo(b) flouranthene)	101. Gamma-BHC
42. Bis (2-chloroethoxy) methane	72. 11,12-Benzoflouranthene (benzo(k) flouranthene)	102. Delta-BHC
43. Methylene Chloride(dichloromethane)	73. Chrysene	103.PCB-polychlorinated phenols
44. Methyl chloride (chloromethane)	**74. Acenapthylene**	**104. PCB-1242 (Arochlor 1242)**
45. Methyl bromide (bromomethane)	**75. Anthracene**	**105. PCB-1254 (Arochlor 1254)**
46. Bromoform (tribromomethane)	76. 1,12-Benzoperylene (benzo(ghi)perylene)	106. PCB-1221 (Arochlor 1221)
47. Dichlorobromomethane	77. Flourene	107. PCB-1232 (Arochlor 1232)
48. Chlorodibromomethane	**78. Phenanthrene**	**108. PCB-1248 (Arochlor 1248)**
49. Hexachlorobutadiene	**79. 1,2,5,6-Debenzanthracene (dibenzo(a,h)anthracene**	109. PCB-1260 (Arochlor 1260)
50. Hexachlorocyclopentadiene	**80. Indeno(1,2,3-cd) pyrene (2,3-o-phenlene pyrene**	110. PCB-1016 (Arochlor 1016)
51. Isophorone	**81. Pyrene**	**111. Toxaphene**
52. Napthalene	82. Tetrachloroethylene	112. 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCCD)
53. Nitrobenzene	**83. Toluene**	
54. 2-Nitrophenol		

APPENDIX I

Historic Fill Database (NJAC 7:26-E, Appendix D)

NOTE: THIS IS A COURTESY COPY OF THIS RULE. ALL OF THE DEPARTMENT'S RULES ARE COMPILED IN TITLE 7 OF THE NEW JERSEY ADMINISTRATIVE CODE.

APPENDIX D

Historic Fill Database

Summary Table

	Minimum (ppm)[1]	Maximum (ppm)[1]	Avg (ppm)[1]	Number of Samples	Number > URU CDCSCC[2]	% > URU CDCSCC[2]	Number > RU CDCSCC[2]	% > RU CDCSCC[2]
B(a)A[3]	0.03	160.0	1.37	441	126	29	33	7
B(a)P[3]	0.02	120.0	1.89	431	146	34	146	34
B(b)F[3]	0.02	110.0	1.91	426	118	28	39	9
B(k)F[3]	0.02	93.0	1.79	412	101	25	26	6
I(1)P[3]	0.02	67.0	1.41	397	70	18	18	5
D(a)A[3]	0.01	25.0	1.24	286	78	27	78	27
Arsenic	0.05	1098	13.2	369	35	9	35	9
Be[3]	0.01	79.7	1.23	213	21	10	21	10
Cadmium	0.02	510	11.1	236	147	62	5	2
Lead	0.28	10700	574	538	259	48	119	22
Zinc	2.45	10900	575	197	80	4	8	4

[1] ppm = parts per million

[2] URU = Unrestricted Use, RU = Restricted Use, CDCSCC = Current Direct Contact Soil Cleanup Criteria

[3] B(a)A = Benzo(a)anthracene, B(a)P = Benzo(a)pyrene, B(b)F = Benzo(b)fluorene, B(k)F = benzo(k)fluoranthene, I(1)P = Indeno(1,2,3-cd)pyrene, D(a)A = Dibenzo(a,h)anthracene, Be = Beryllium